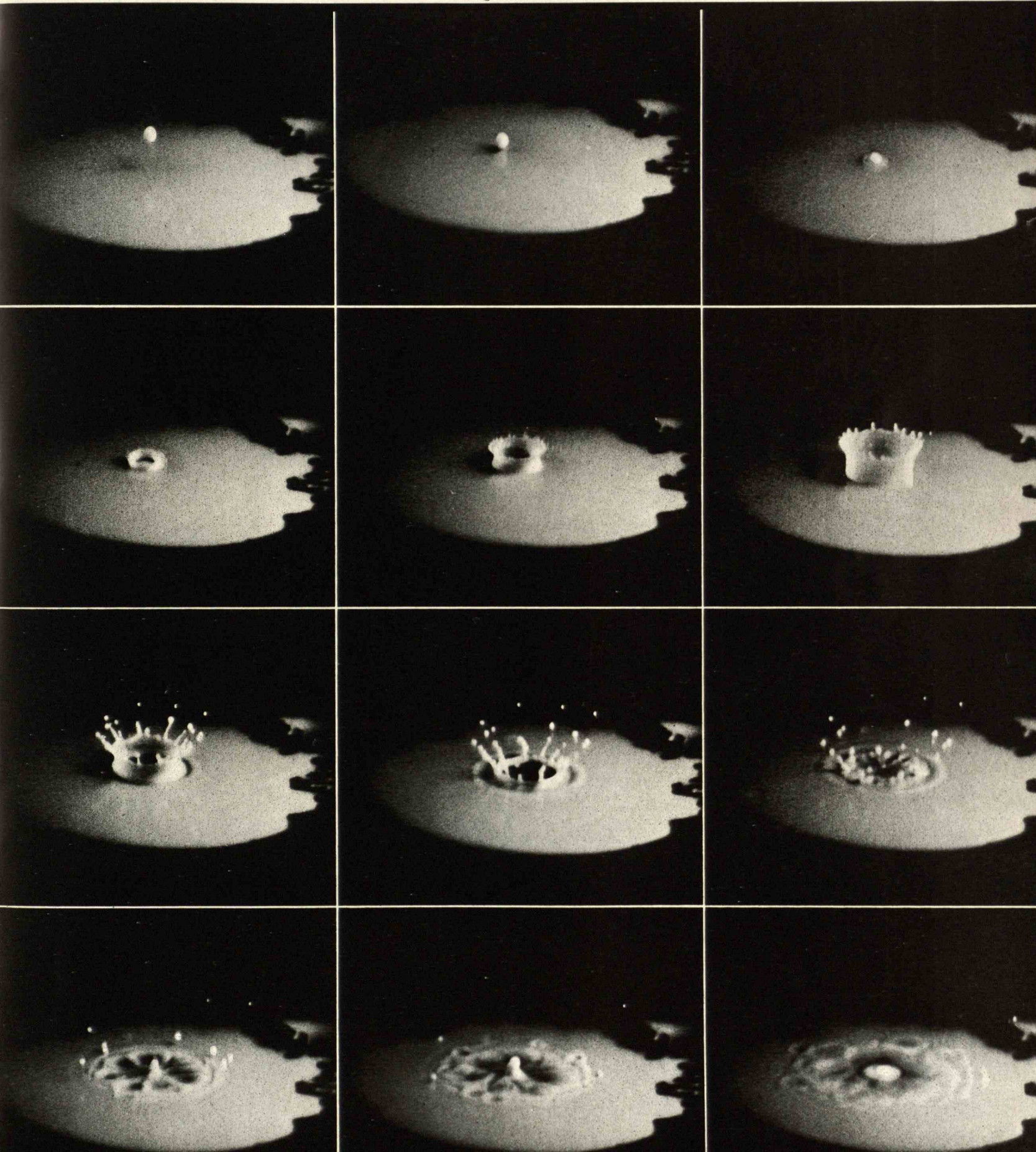


July 1934

TECHNOLOGY REVIEW

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technology review

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THE TABULAR VIEW

AS INVENTOR of the cathode ray tube, of ductile tungsten, and of new and improved x-ray tubes, WILLIAM D. COOLIDGE, '96, has made seminal contributions to pure science, industrial development, and medicine. His achievements as a physical chemist have carried him to the directorship of General Electric's Research Laboratory (The House of Magic). The article by him in this issue is adapted from a paper presented before the Physics Society at M.I.T. ¶ KARL T. COMPTON is President of M.I.T., Chairman of the Science Advisory Board, and Chairman of the Governing Board of the American Institute of Physics. In the light of Dr. Compton's discussion of national planning, it is interesting to recall President Roosevelt's message to Congress on June 8, when he said: "The extent of the usefulness of our great natural inheritance of the land and water depends on our mastery of it. We are now so organized that science and invention have given us the means of more extensive and effective attacks upon the problems of nature than ever before. . . . Human knowledge is great enough today to give us assurance of success in carrying through the abandonment of many millions of acres for agricultural use and the replacement of these acres with others on which a living can be earned."

AS ONE of a small group of able science press writers who are responsible for the greatly improved kind and quality of science news in recent years, HOWARD W. BLAKESLEE contributes much to the dissemination of scientific information. Before assuming his present position of Science Editor of the Associated Press, Mr. Blakeslee had had more than 20 years experience in newspaper and press association work. In his undergraduate days at the University of Michigan, he was a correspondent for Detroit newspapers, and he has served as news editor of the southwestern, central, and eastern divisions of the Associated Press. He has visited the leading laboratories from coast to coast and has reported scientific meetings in all parts of the country. The Review presents with pleasure the address given by him at the Institute's graduation exercises last month. ¶ B. A. THRESHER, '20, is Assistant Professor of Economics at M.I.T. Before coming to the Institute in 1929, he held the Henry Lee Memorial Fellowship in economics at Harvard University. ¶ L. F. WOODRUFF, '18, is Assistant Professor of Electrical Power Transmission at M.I.T. He will be recalled as the author of the much-discussed article on the mathematics of bridge in The Review for January, 1934.

THE Review is not published during the summer months following July. This issue concludes Volume 36. Number 1 of Volume 37 will be published on September 27, and dated October. Readers who bind their copies of The Review are reminded that if they possess nine numbers of Volume 36, their files are complete. An index to Volume 36 will be ready in September and will be supplied post free on request.



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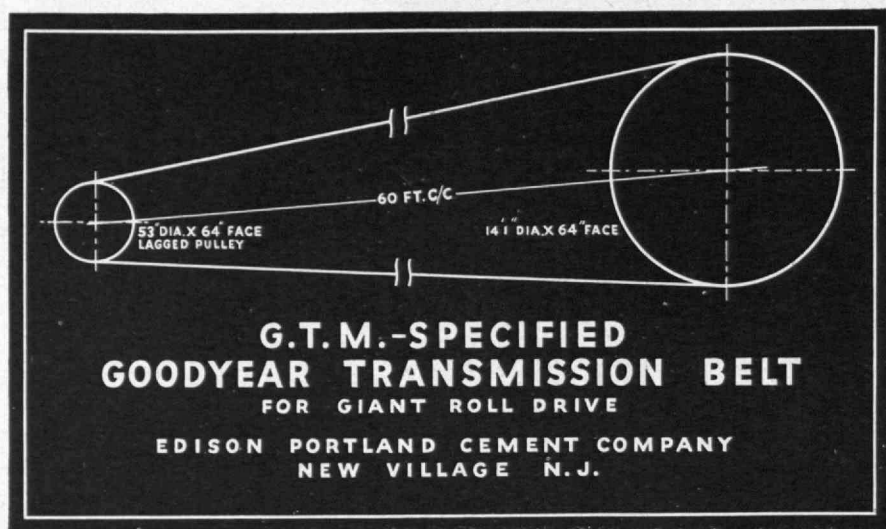
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A  JOB

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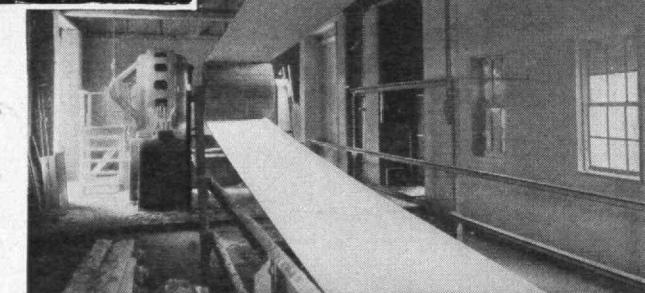
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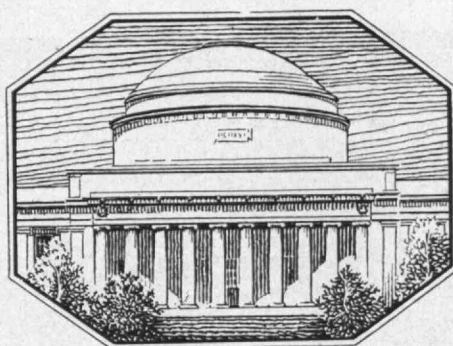
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IN RUBBER

GOODYEAR





The Technology Review

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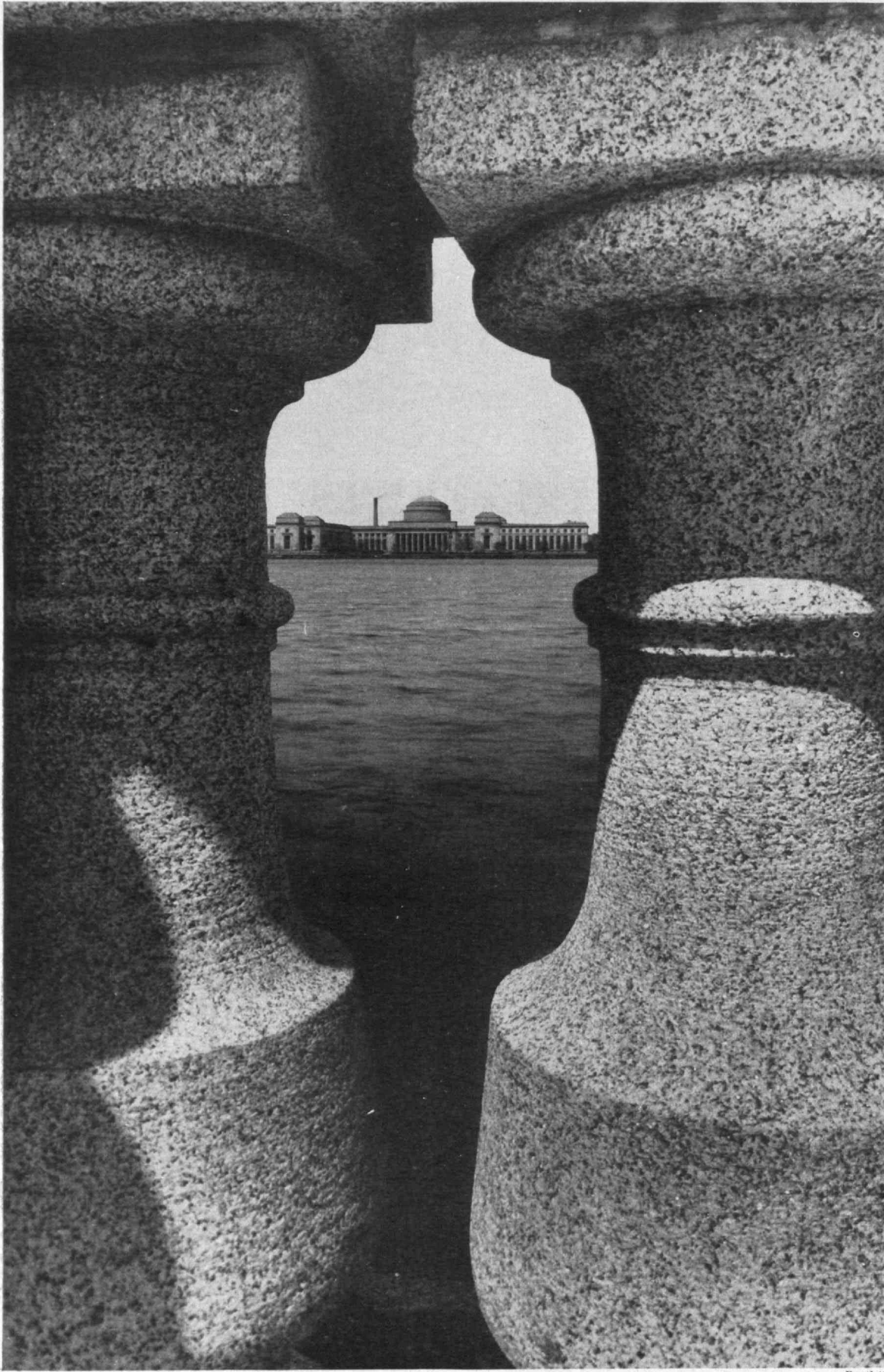
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Bartlett

Perspective . . . Focal Depth . . . Scale. On the Boston side of the Charles River, a granite frame; beyond in Cambridge, the main group of M.I.T. buildings

THE TECHNOLOGY REVIEW

Vol. 36, No. 9



July, 1934

Research as a Career

Evolution of Industrial Research—Opportunities for Physicists

BY W. D. COOLIDGE

WHEN I stopped teaching in 1905 (28 years ago) to join the staff of the General Electric Research Laboratory I was neither fish nor flesh but a mixture of electrical engineer, physicist, and physical-chemist. I left the shelter of M.I.T. to join Dr. Willis R. Whitney's ['90] new venture — then only four years old — with fear and trepidation, for that laboratory was itself an experiment, representing as it did the first attempt in this country at organized industrial research. So there were for me two uncertainties: first, the question of how I would fit into that laboratory, and, second, the question of how long the Company would continue to operate it. And about the only other opportunity for a physicist at that time seemed to be in teaching. There was then very little research going on in our American colleges. Dr. Arthur A. Noyes' ['86] laboratory of physical chemistry at M.I.T. had been in operation for perhaps three years, but it was quite unique.

I have said that the research laboratory of the General Electric Company represented a pioneer effort in this country. It was really a pioneer effort in a broader sense, for, so far as I know, it was the first laboratory of its kind in the world. There was organized industrial research in Germany, but — at least as I came to know it — of a very different kind. This German industrial research was carried on behind locked doors, the individual worker not knowing what was going on even in the adjoining room of the same laboratory.

Dr. Whitney started out with the idea of coöperative effort, and, to this end, he encouraged every member of the staff to know as much as possible about what

every other member was doing. He not only had no locks on the doors, but at one time he took off all the inside doors. And every worthwhile result was published promptly.

Since this laboratory was started, some 1500 others have sprung up in this country and a rapid growth of similar industrial laboratories has taken place in other countries. The dependence of industry upon research has come to be universally recognized. We see the recognition not only in capitalist countries with competing industries, but also in communist Russia with no internal industrial competition.

I have so far spoken only of industrial research; but scientific research in the universities, government institutions, commercial laboratories, and privately endowed research laboratories has also increased by leaps and bounds, and not only increased but done so at an accelerating rate.

And not only has the number of workers increased, but the physical equipment has been enormously improved. Think of the new tools in the modern laboratory. In place of the glass and sealing-wax, the slow Topley or Sprengel vacuum pump and the poorly equipped shop of the old laboratory, we have today hydrogen and oxygen gases, compressed air and rough vacuum piped everywhere, high-speed, high-vacuum pump equipment, the gas-torch for metal cutting, various kinds of welding equipment, including the latest variety of thyatron-controlled spot-welding which lets you literally sew sheets of metal together and with vacuum tight joints; vacuum and hydrogen

high-temperature furnaces, copper brazing equipment, liquid air and liquid hydrogen, glass-blowing machinery, machine-shops with wonderful machine-tools, current amplifying devices and portable meters instead of supersensitive galvanometers, carbide drills for boring holes in glass (this glass drilling with turpentine on the end of an old file used to be such a tedious, ticklish and usually disappointing operation; now you drill safely into glass at the rate of say two inches per minute). I have mentioned only a few of the new tools in the modern laboratory. Then there are the mechanics, professional glass-blowers, and assistants to operate the tools.

It used to be quite essential for the research scientist to be very skillful with his hands — good at glass-blowing and handy with tools. This is still no handicap, but is no longer as necessary as formerly.

We have a large machine shop and carpenter shop and several glass-blowing rooms. Besides this, some of the men have lathes, small milling-machines, upright drills, and so on, in their own rooms. In the Philips laboratory at Eindhoven, Holland, I found not only the main, central machine-shop, but also a small shop or a glass-blowing room, with a mechanic or glass-blower, and a storage battery room, centrally located for each group of seven work-rooms.

There are still men, like R. W. Wood at Johns Hopkins, who can do a lot with glass and sealing-wax. Rutherford has got along in the past with very simple apparatus, but when I visited his laboratory last October I was interested to see that his work was being rapidly and wonderfully mechanized. Even in Russia today, in spite of the hard living conditions, you find laboratories surprisingly well equipped.

Certainly industry has come to recognize its dependence upon fundamental research, to see that its engineering is based entirely upon the facts and principles established in this way. We had a good illustration in our company recently of the fact that radically new developments can come only through fundamental research.

Over a period of about a year we tried to get suggestions for new products from our employees, engineers, and others. Seventeen hundred suggestions came in. These were boiled down by a competent committee to 24 which were deemed worthy of further consideration. Even the 24 all lacked one essential thing: novelty. But this was inherent in the game because, even by definition, for novelty we must have some underlying

new fact or principle. The civilian committee formed several years ago to assist the navy in the consideration and investigation of suggestions as to how to increase the safety of our submarine crews, had a similar experience. Of 110,000 suggestions received, only a paltry dozen seemed worth following up.

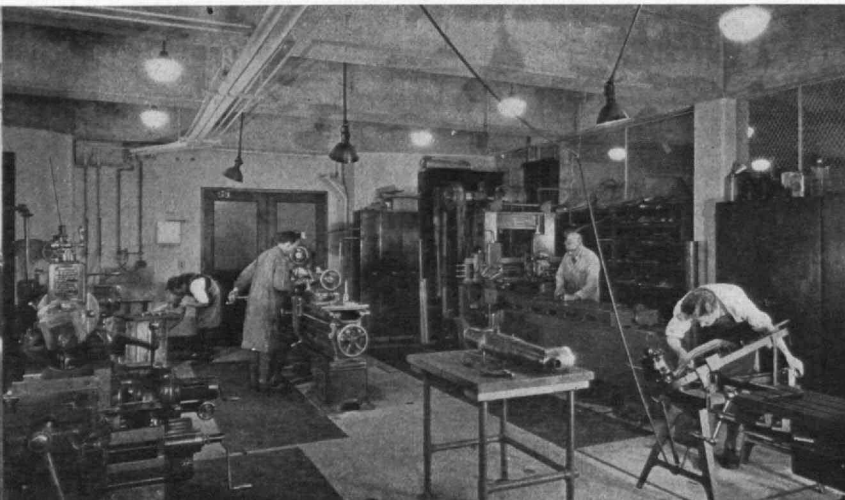
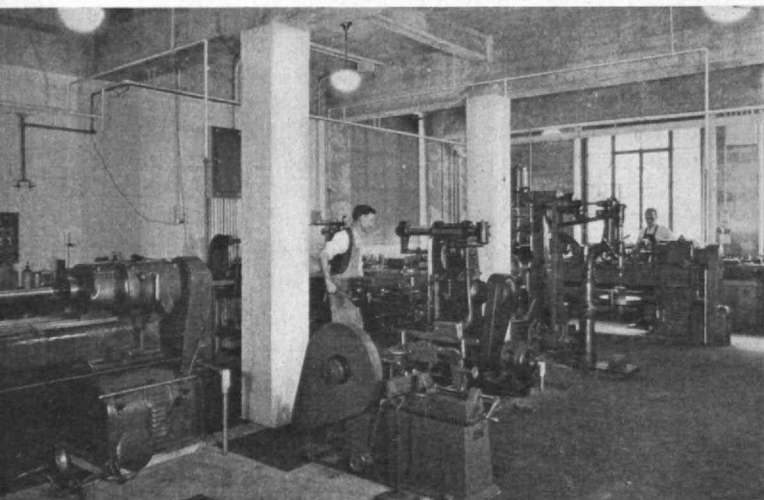
A gentleman came to us recently with a rather naïve and startling suggestion. He wanted to take our staff in hand for the summer to teach us how to make inventions. He said that the process of inventing had always been a sporadic one, but that he could teach us to invent to order. At the beginning of the interview I asked him whether he was dealing with unknown as well as known quantities. He said, "No, only with known quantities." He laid much stress on the need of always considering many different ways of arriving at the desired result. In the course of conversation he referred to the storage battery. I asked him whether a storage battery to have say 10 or 100 times the capacity of our present batteries per unit weight would be a good subject — amenable to his methods. He said, "Certainly." Upon being asked how he would proceed — that is, to name a single method of attack — he said that he would want to start with several methods. Upon being asked then to name two or more methods of attack, he changed the subject. He was certainly right in excluding unknowns, but apparently he did not realize how much they stand in the way of the new.

It may be helpful if I outline the scope of our work and of the organization of our laboratory.

At the start, the work was essentially all original research. But soon new facts were discovered and these new facts were applied in the laboratory in the creation of important new products. When these new products left the laboratory and were taken up by the factory, it was always necessary for the laboratory to help with the difficulties which arise when factory production is started. In this way, contact was established between the staff of the laboratory and the engineers in various departments. And so the work of the laboratory acquired a wider scope, which it has maintained ever since. It carries on the original research work for which it was established, applies new facts and principles discovered by its own staff and by others, and at the same time renders service on special problems brought to it by our engineers and factories.

It is, I think, essential for the success of an industrial research laboratory that it do fundamental research, apply the results of fundamental research, and render

As Dr. Coolidge points out, in the laboratories of today the scientist has at his command adequate accessory equipment. All of the major departments at the Institute engaged in research contain adequately equipped shops, for example. Shown below: On the left, that of the Department of Chemistry; on the right, that of the Department of Physics



JULY, 1934

The George Eastman Research Laboratories, in which the room shown adjacently is in the Organic Section, is supplied with vacuum pumps, thermostats, electrical measuring instruments, mercury arcs, hot closets, blast furnaces, equipment for high-vacuum technique, and operations at high temperatures

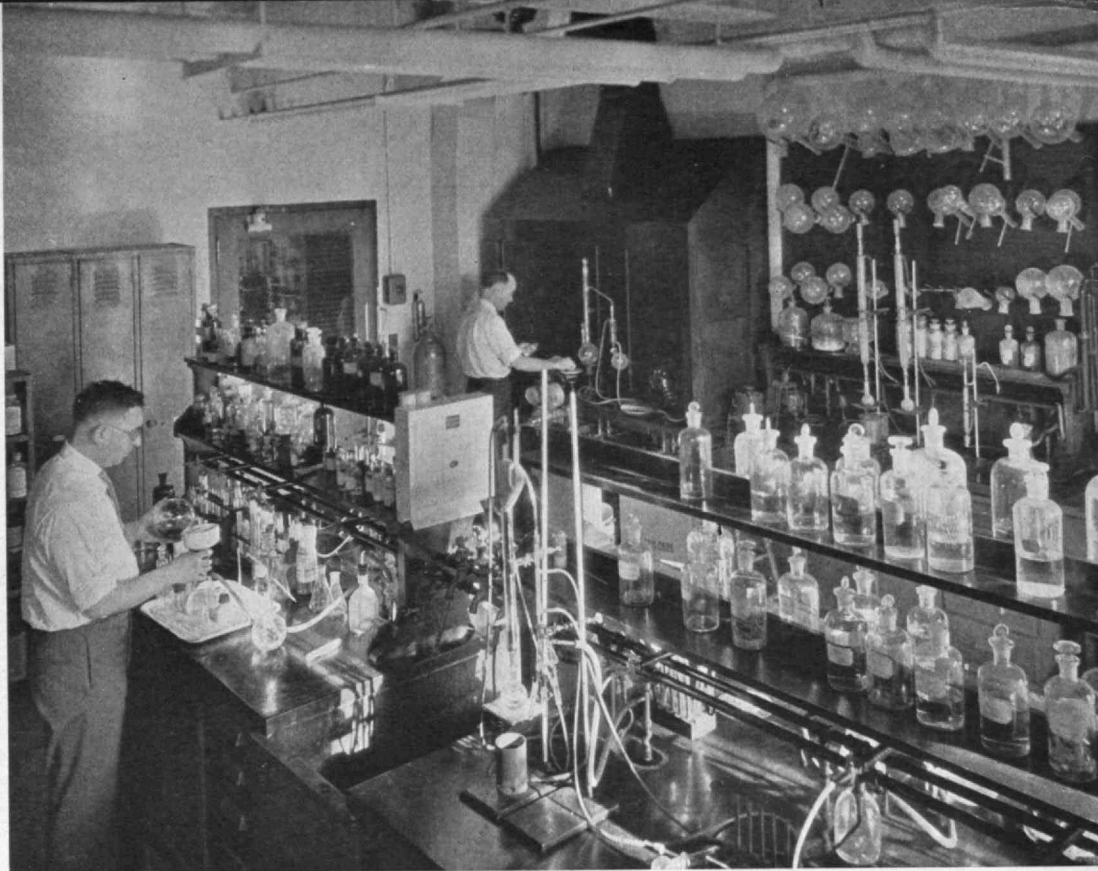
expert service to the engineering and manufacturing departments.

The demands made upon such a laboratory by the engineering and manufacturing departments may vary a great deal from time to time, depending upon business conditions, but the other activities of the laboratory can be made to take up the slack.

I have a very strong feeling that the effort which pays the biggest returns is the fundamental research and its application; but the service work, or trouble-shooting (whatever you want to call it), must, of course, be done, and is, furthermore, very helpful in acquainting the staff with the problems of the industry.

Some organization is, of course, necessary in such a laboratory, but it should not be too rigid, as a man may be asked to work in one field today and in quite a different one tomorrow. And for this last reason it is very necessary that the research worker himself should be as well grounded as possible in fundamentals, rather than specialized too closely in some one limited field. In so far as technical details are concerned, he should be competent to direct his own work. Otherwise he is only an assistant, and no large research laboratory can be successful on the basis of a director and a group of assistants. The number of mere assistants, in fact, which can be used to advantage is much smaller than one might think.

Our administrative force consists of a director, associate director, two assistant directors, and an executive engineer. There are 46 research associates and 30 assistants. These, together with the clerical force, mechanics, carpenters, glassblowers, plumbers, electricians and janitors, give us a total force of about 270. Of the research associates, ten are now engaged in fundamental research, and their work will account for about 150,000 of the million dollars that we are spending this year. So about 15% of our effort is now devoted to fundamental research. The other 85% consists of engineering development and investigational work. The staff is organized into several sections, and the head of each section is largely responsible for all of the work in his field. He makes direct contact with the engineers and factory managers whom he serves, and by correspondence and in other ways takes care of outside contacts. He is naturally expected to keep the laboratory management well informed, but he is not hampered by red tape.



Our company has a number of other laboratories, including the Thomson Laboratory at Lynn, Works' laboratories (largely for the control of factory processes) at Lynn, West Lynn, Pittsfield, Bridgeport, Schenectady, Fort Wayne, and Erie; the General Engineering Laboratory and the Illuminating Engineering Laboratory at Schenectady, and the Incandescent Lamp Laboratory at Cleveland. The total number of people employed in all of the laboratories is now between ten and eleven hundred.

From a college course, I think that one might easily get the impression that research work consists in the making of accurate scientific measurements. I want to warn against that mistake, for the man who merely makes the measurements will never be anything but an assistant. The research scientist must be an investigator; he must be capable of taking the problem and getting the answer.

It is also very necessary that the scientists working in an industrial laboratory should be able to coöperate well with other people. In the early days, our laboratory was frequently referred to as the bears' cage, and an important part of the director's job was to keep the bears from fighting. But we found that it did not pay to keep a man, no matter how good he was, if he could not get along well with the rest of the staff.

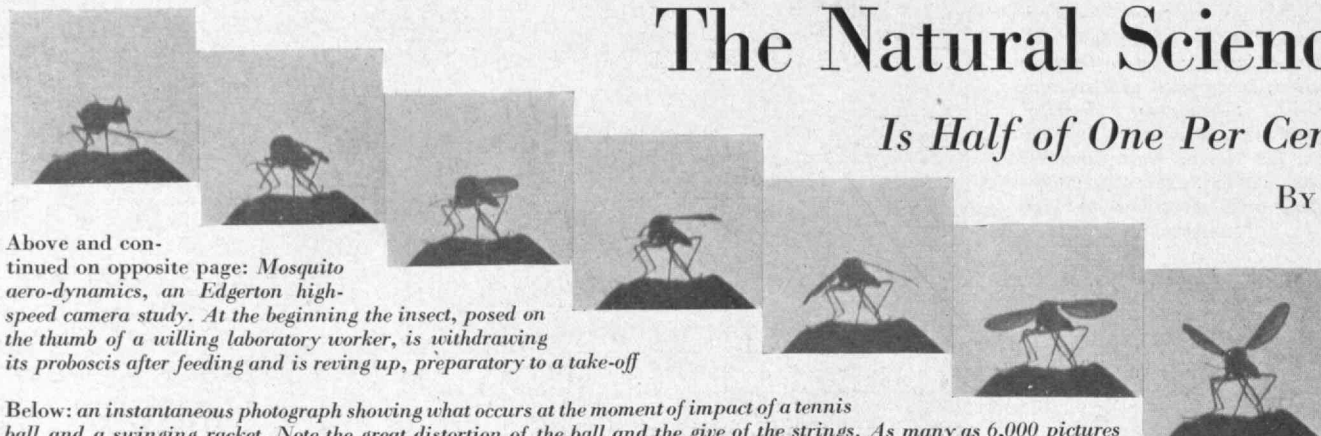
As I have said, only about 15% of the expenditure of our laboratory is for fundamental research. One reason for this is the scarcity of men who, by birth and training, are adapted to it. What are the qualifications of such a man? Dr. Hull says, "The figure of merit of a research physicist is expressible in degrees of ignorance rather than knowledge." Dr. Whitney says, "The valuable attributes of research men are conscious ignorance and active curiosity."

If these brief statements need clarification, this is to be found in a statement made by Mr. Lawrence A. Hawkins [99]: "The research man is primarily interested in the unknown. . . . It is his restlessness in the face of the unknown, which (Continued on page 366)

The Natural Sciences

Is Half of One Per Cent of

BY KARL



Above and continued on opposite page: *Mosquito aero-dynamics, an Edgerton high-speed camera study. At the beginning the insect, posed on the thumb of a willing laboratory worker, is withdrawing its proboscis after feeding and is revving up, preparatory to a take-off*

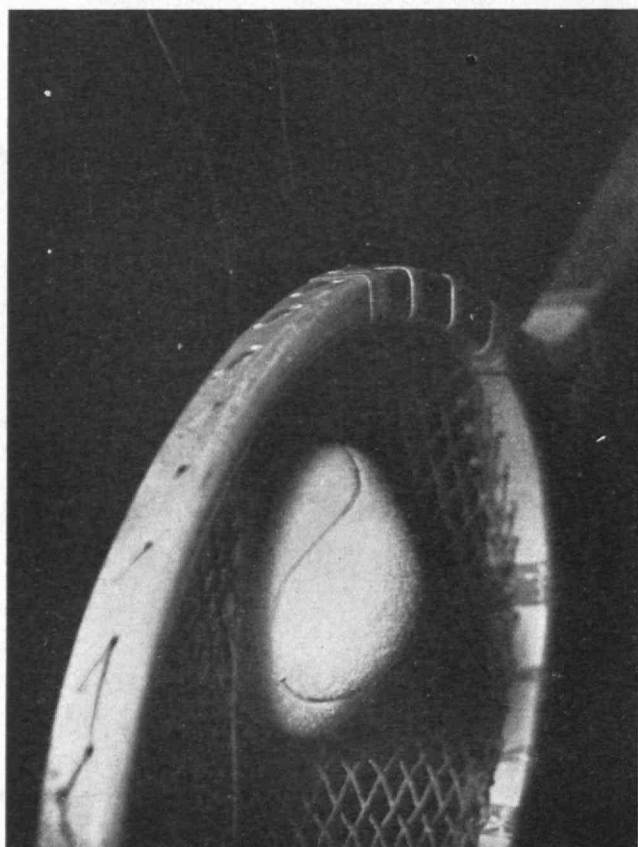
Below: *an instantaneous photograph showing what occurs at the moment of impact of a tennis ball and a swinging racket. Note the great distortion of the ball and the give of the strings. As many as 6,000 pictures per second have been made by this method at Technology—a development deriving from research in electrical transients*

ONE of the most hopeful things in the world at the present time is the extent to which national planning is occupying the attention of governments and their people. We may not always agree with all elements in the objectives of these plans, but they do certainly represent an advanced stage of social consciousness. The five-year plan of Russia was remarkable, not so much because of its objectives as because of the fact that a great people was willing to sacrifice and to work in order to lay the foundations for a better state in the future. The same spirit, though expressed in a different way, has been a predominant part of Italy's renaissance in recent years. Whatever opinion one may have of the details of policy of the present administration in the United States, there is no doubt that national planning on a large scale is the keynote of its activities. This

national planning does not always appear a clear-cut picture, for obvious reasons. In the first place, it is mixed with the simultaneous effort to get out of the depression and care for upwards of 10,000,000 people who are unemployed. In the second place, the plan must of necessity be experimental since national planning on a large scale is a new thing with us. Experimenting always involves mistakes, false starts, and discouragements, and anyone who has had any practical experience, for example, as an experimental scientist, will not be disturbed at occasional mistakes and false steps in the progress of any great social experiment.

I think this thought may be worth dwelling on for a moment. As graduate students have come to me for advice in regard to the choice of a subject for their investigations looking toward a doctor's degree, I have always warned them at the beginning that any research which is worthy of the name is a gamble in the sense that its conclusion cannot be foreseen from the beginning. If the end could be foreseen from the beginning, it would not be a research and would not be worth doing because it would not represent any new contribution to knowledge. For this reason, it is certain that a considerable proportion of experiments which are well worth trying will prove to be unsuccessful, whereas others will be successful and some few will be really great contributions. This is well understood by the directors of great industrial research laboratories, who are looking for practical results from research. In their experience they know that much of the work which is done will turn out to be unprofitable, but they realize that it is worth the effort because, out of the whole group of researches, if intelligently carried on, there will be some so successful as to more than justify the entire effort. This is not always realized by the industrialist who has no background in research, who hears research being talked of, and decides that he will try it and then quits in disgust if his first attempt proves unsuccessful.

I believe that there is a very close analogy between research and development in the natural sciences and research and development in political and social science, and that the President is on firm ground when he states that national planning is an experiment in which those efforts which prove unsuccessful should be discarded, and those which prove successful should be developed. There can be no other way of progress, and



in National Planning

the Federal Budget Enough?

T. COMPTON



Note the fluttering of the mosquito's wings as it tries to take off. The last picture in the upper corner shows it finally in the air, and in subsequent pictures a barrel roll almost results in a crack-up. The technique by which these entertaining super-speed pictures are made is constantly being used in important scientific studies and it is yielding hitherto unobtainable information.

Below: A dropped glass of milk at the instant it shatters upon the floor. On the front cover of this issue is a strikingly beautiful sequence showing a drop of milk splattering in lovely forms on a hard surface.

the failure of some aspect of the plan, such, perhaps, as the plan to impose codes on small unorganized industries, cannot be considered as damning the entire effort. In the New-Deal experiment, success or failure will be determined by the answer to the question, after sufficient experience, "Is our situation on the whole better or worse than it was?" The spirit of the administration is suggested by the names of some of its agencies, such as the National Planning Board, the Business Advisory and Planning Council, the Regional Planning Board, various conservation boards, the Federal Coördinator of Transportation, the Science Advisory Board, and so on. To the extent to which these and other agencies indicate that the people of the United States are attempting to plan more effectively for their future welfare, to that extent it is justifiable to say that they are advancing in their state of civilization.

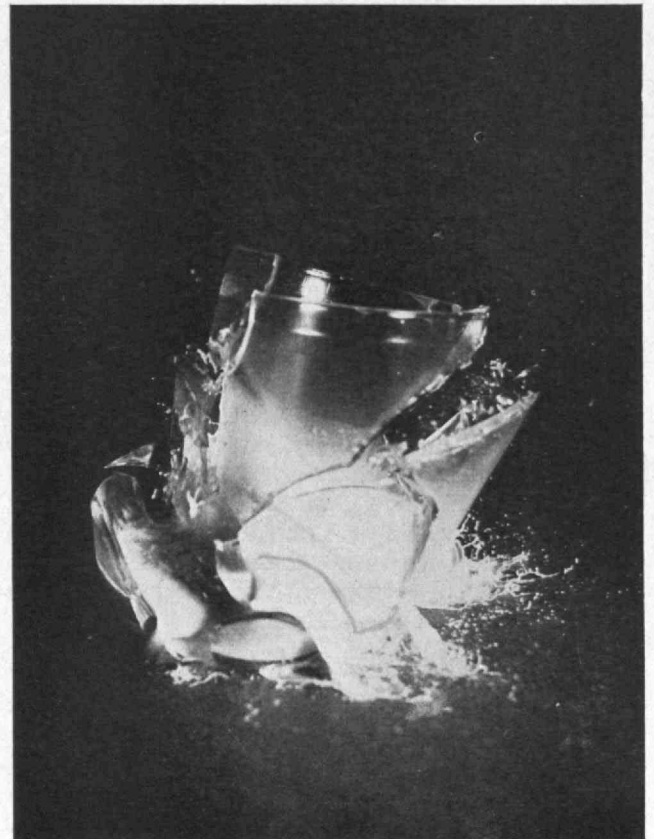
Now I come very briefly to a particular element in the situation; namely, the place of the natural sciences in national planning. According to certain criteria, this place does not loom very large in the present scheme. For example, the scientific bureaus of the Federal Government all combined account for only one-half of one per cent of the annual Federal budget, and a large proportion of the work of these bureaus does not go into planning or constructive work for the future but into testing and other work of immediate interest only. Measured by the pocketbook, therefore, we can not say that the natural sciences occupy a very important place in the scheme of Federal Government.

Contrast this with the expenditures for national defense or for emergency relief and employment, both of which are essential. To me the contrast appears rather absurd, because the development of pure and applied science can be shown to be so fundamentally important for the future that its relative neglect indicates in this particular respect what I would call a very low state of civilization, incidentally far below that which is at present shown by the governments of a number of the foreign nations. For example, it is the new developments in pure and applied science which will control the national defense of the future, which will provide the employment of the future, which will determine the so-called standard of living of the future, which will determine the opportunities in the future for leisure and cultural pursuits, as well as for health and physical

prosperity, and yet the interest of the Federal Government in these developments for the future is represented by some small portion of one-half of one per cent of the Federal budget.

Let me illustrate the kind of thing which has happened over and over again, and which is certain to happen in the future to some degree in proportion to the extent to which scientific progress is either stimulated or curtailed by the degree of its financial or other encouragement. I will take this example from the electrical industry, although analogous examples could be found in the fields of transportation, agriculture, medicine, and so on.

About three years ago there was an international celebration of the discovery of the principles of electromagnetism. These principles were discovered by two



Comptonisms

Of all the attempts which I have heard to define civilization, the one which seems to me the keenest and most comprehensive is: "The state of civilization of any people is measured by the degree to which they are willing to forego their present desires for the sake of their future welfare."

* * *

A country which allows its resources to be used extravagantly and wasted, or which not only spends its present income but borrows heavily on the future, or which curtails its educational system in order to meet the cost of current payrolls or construction projects, is not a government which can be said to have reached a very high state of civilization, at least in comparison with the possibilities before it, and in thus speaking of the government we mean, of course, the people as a social group.

* * *

Man has an irrepressible curiosity for new knowledge. This is the fundamental basis and urge for scientific work. Man has also an irrepressible desire to use his knowledge for the accomplishment of his desires. This is the basis of invention and of engineering.

* * *

There is real danger in the use of facilities instead of the brain.

* * *

I should define culture as "the sympathetic understanding and appreciation of life."

men, Joseph Henry in America and Michael Faraday in England. Joseph Henry spent his early life in Albany, N. Y., and had an ardent ambition to lead the life of an actor. He organized a local theatrical group and wrote several plays, and was well on his way to theatrical success when he was taken sick and spent some time in a hospital. While there a friend loaned him a popular book on natural science, which described some experiments which to us seem very elementary but which greatly stirred his interest and imagination. This book raised certain questions, such as, "Why does a stone fall toward the ground? Why does the flame of a candle point upward? If the candle were turned upside down, would the flame point downward, and if not, why not?" These questions so interested Henry that he decided to spend his life investigating them. He resigned from his theatrical group, went to school in the Albany Academy, later became a teacher in that Academy, then Professor of Physics at Princeton, and finally Director of the Smithsonian Institution of Washington. He was the first really to understand the operation of an electromagnet and to discover the phenomenon of self-induced electric currents. He built perhaps the first printing telegraph

and the first wireless set. He worked under the difficulties of a pioneer. For example, he had to make his own insulated copper by wrapping the wire with strips from his wife's discarded dresses and petticoats. There being no suitable high-voltage voltmeters in existence, he had to estimate his voltages in terms of the number of members of his class who, holding hands in a line, could be perceptibly shocked by the voltage with which he was working.

Simultaneously and independently, Faraday in England was investigating the mutual action of one electric current on another. It is said that the King once visited his laboratory, and pointing to certain apparatus, asked, "What is the use of these things?" To which Faraday replied, "Your Majesty, of what use is a baby?" Another time, when the Prime Minister asked the same question, he replied, "My Lord, some day you will tax these things."

Faraday's prophetic vision is evidenced by the fact that the use of electricity now affects our life at almost every turn. It is an essential element in a large part of our transportation. It performs a considerable proportion of our household work. It provides practically all of our light and is therefore basic to all of our activities after sunset. It has found important medical applications and, as Faraday predicted, it is taxed. At the present time it provides employment in this country for 357,000 in the telephone industry, 94,000 people in the radio industry, 290,000 people in the motion picture industry, 1,035,000 people in the electrical manufacturing and public service industries, or about one and three-quarters million in direct employment. To this might be added an even greater number of people employed in such industries as the automobile, various metallurgical processes, and so on.

Thus we see that these scientific experiments of Faraday and Henry, followed by the practical inventions of Thomas Edison and Elihu Thomson and a host of others, have not only created for us comforts and opportunities, but have provided for the employment of perhaps three or four million people and the financial support of their families, so that it can fairly be said that as a result of this scientific and engineering work during the past hundred years, we now have the direct support of from 10 to 12 million people in this country.

Important as this is, it would not be nearly so important if it were an isolated instance. Its significance lies in the fact that it is only one of a great number of similar stories which might be told, and they all lead conclusively to the conclusion that it pays in the long run to encourage the progress of pure and applied science. Had the development of the electric light, or the radio, or the automobile been inhibited, our unemployment crisis would have come sooner and would have been more severe. If we do not encourage progress in the natural sciences we will suffer the consequences in the future, either through lack of advantages or of employment which we might otherwise have enjoyed, or through unsuccessful industrial competition with other nations which take a more progressive attitude and lay a strong foundation for future welfare by an interest in the natural sciences which is not measured by a portion of half of one per cent.

Unwritten News from the Laboratory

The Progress of Science As Seen by a Newspaper Man

BY HOWARD W. BLAKESLEE

A NEW law of physics, which promises to revolutionize the making of alloys, was discovered recently by an American scientist. This law, and the surprising things it has done, are still unpublished, known only to a few persons. It is only one of a series of scientific discoveries, almost equally unknown to the public, nearly all made during the present depression and all laying the foundation for a thousandfold increase in the world's wealth and a universal spread of more leisure.

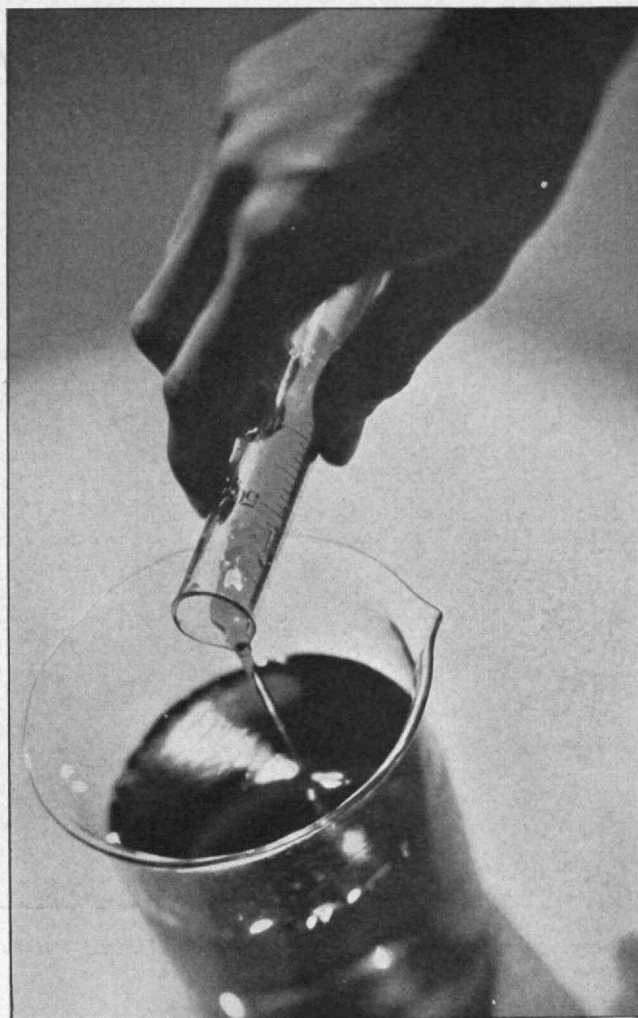
When Sir Arthur Eddington, the British astronomer, was in this country a few weeks ago, he opined that "the mysterious paradoxes of economics may prove to be troublesome for scientific minds that are accustomed to simple and straightforward problems like the Einstein theory." I think that Sir Arthur was a little modest about the scientists. It used to be said that there were 12 men in the world who understood Einstein's theory of relativity, but I have yet to hear of even one economist who understands the economic paradox.

The paradox was largely produced by scientists. They made the extra wealth and leisure whose distribution just now puzzles the world. Their simple and straightforward approach may help in the distribution and their new discoveries certainly will be a factor in the settlement.

I have been investigating recently some of these new discoveries and asking scientists about their significance. If you went outdoors on a cold winter morning expecting to find ice on a pond, but found instead the surface water warm while the water half way between top and bottom had frozen solid, that would look like an upset in the laws of nature. Yet it would be scarcely more surprising than the way molten metal cools under operation of the recently found law of physics.

The heart of a molten casting cools and freezes, while the outer surface is still liquid hot. In cooling from the inside the metal freezes without the usual number of flaws. It forms long crystals, which lie parallel to each other, one of the strongest structural forms known in nature. The metal literally grows with the same tough weave as the wood of a tree. In some tests raw castings in the form of bars have shown three times the durability of rolled bars under twisting. This is no laboratory curiosity, but a commercial process.

It may not be obvious why the saving of money and the making of better metals should be important to a world already overstocked with metals and the facilities



The hand of Science

Bartlett

for making them. The reason is that every great technical advance sets new forces in motion completely outside its own field. The latest example of this is the story of bromine and the American automobile. There is no apparent connection between the two. Ten years ago engineers realized that the high compression engine era was at hand. For these engines anti-knock gasoline was needed, and bromine was an element in the first anti-knock fuel.

Bromine at that time came from bitter water wells, and the supply was limited. Looking for a new source, chemical engineers asked the foremost bromine authority whether the element could be extracted from the sea. He replied yes, by piping the Pacific ocean over the Rockies, lifting the water by pumps, and letting it run by gravity into a desert. There it would evaporate until it became bitter water. Then the bromine could be recovered.

"Is it as difficult as that?" the engineers asked.

"Yes, except that the method might be different."

With that encouragement about a different method, the engineers put to sea on a steamer. Months later they came back with a few hundred pounds of bromine extracted from the ocean. It cost half a million dollars. They had a new method, however, and they learned how to reduce the cost.



Science Service

Decoying the sea to rob it of bromine and even gold. Inlet of Dow bromine plant on North Carolina coast

So the world's first seawater bromine plant opened this year in North Carolina, but by now bromine is just the beginning of the story. Gold, silver, and mercury, all in recoverable form, have been found in small quantities in the bromine waste. Meanwhile, other engineers have been mining the ocean and extracting magnesium. As a result, one of the common household health remedies gets much of its magnesium from a famous Pacific coast harbor.

Thus you have the high-compression cylinder of an automobile sponsoring medicine, bromine, gold, silver, and mercury from the sea, and ahead a vista of mining the ocean for all the minerals man knows.

It may be difficult to imagine the quantum theory promising to change the building and the materials industries, but precisely that has happened and it is another recent scientific discovery. The rapid development of the quantum theory applied to the atom indicates that it may be used soon to calculate the theory of solid matter. This has not been possible heretofore. When it is accomplished, an engineer may be able to set down on paper specifications of the qualities and properties he wants in every sort of structural material.

The computations can be made with the aid of such calculating machines as those built at M.I.T. Using this atomic blue-print, the manufacturer may fabricate any degree of hardness, ductility, tensile strength, electrical properties, and corrosion resistance.

Until now the world has been limited for its structural needs and its machines to a few materials which were dug from the earth, or to improvements made in them by a few processes unearthed in laboratories. When the quantum theory can be used in planning, there will be architects not only for design but for durability and every other structural quality. In due time it is possible that such a new structural era will as far eclipse our present age of steel and our more recent age of alloys as these two overshadow the bronze age of our half-savage ancestors.

Of late most of the discussions of alcohol have centered about repeal and blends. I have seen nothing about a new process, developed in this country, which will convert alcohol 100% into acetic acid, and do so very cheaply. This is an outstanding industrial move and a direct step toward synthetic dress goods of greater beauty, higher quality, and more universal dependability. It is a step toward making textiles and more of other things directly out of trees.

A group of the most successful industrial scientists in the country is at work on a plan to produce power from a new source. They hope to use a small tropical island. There will be nothing on the island except a power plant, and a few caretakers to operate it. The power will come from the sun and the sea. The scheme is not as visionary as it may sound. The new idea

arises from some old schemes that failed. These started in Egypt with an attempt to use sun power to evaporate ether and run a wheel. It failed because too much ether was lost in condensation. Recently the same principle was tried on the difference in temperature between deep, cold sea water in the tropics and the warm surface water. Still later the Arctic was considered for a similar project. Sea island power is a new and different version of these projects. If it is perfected, the scientists expect to use a new method of transmission to bring the energy to the mainland.

Columbus gave the world a whole new hemisphere. In the last three years, discoveries in the atomic nucleus have opened to man's exploration and exploitation a mass of the earth's substance 200 times greater than the entire new world — North and South America and the oceans, too. This atomic nucleus contains 99% of the mass of the entire atom, of all atoms. In other words, the atomic nucleus is 99% of the whole earth. In this nuclear mass is stored most of the energy in the world.

The fact that a nucleus existed was not even known until 1896. All man's chemistry, mechanics, and use of power dealt only with the thin outer shells of atoms. Even after 1896 the nucleus remained for years untouched, except as the meager supply of radium enabled scientists to discover some of its contents. In the last three years, however, high-voltage tubes have given

engineers the power to break through the atomic shell and directly attack the nucleus. One sensational discovery has followed another. I mention only one, made this year. Ordinary elements become radioactive when their nuclei are bombarded with high energies. I have been asking physicists whether they think this will lead to cheap, synthetic radium. Their answer is yes, not at present, but almost certainly in the future. They say they may not get radium itself, but expect to obtain artificially produced radon, the radioactive gas. The gas is extensively used for medical treatment.

This year it is beginning to appear that some of our foremost scientists have been hasty in predicting that it is hopeless to expect useful power out of atomic energy. Some of these predictions were made after Cockcroft and Walton, two British physicists, had obtained atomic particles of 15,000,000 volts energy from a tube of 600,000 volts.

There seemed no question that the 15,000,000 volts was mostly the energy released by the conversion of the mass in the atomic nucleus, but there seemed only a slight prospect of ever getting enough of these 15,000,000-volt particles to do anything useful. Progress now has been so rapid that Dr. Harry A. Barton, director of the American Institute of Physics, said two weeks ago: "It is reasonable to suppose that just as the ancients developed the production of heat from chemical reactions, just as James Watt developed the steam engine, and just as Faraday, Henry, and others developed the dynamo, so Cockcroft and Walton have begun the development of a process equally significant to the human race."

Another group of scientists is studying the use of our rivers to water lands now arid. Canals, they say, are too wasteful, but as new structural materials develop, water can be piped in closed conduits for great distances.

This idea may have some immediate appeal if the Japanese current keeps shifting as oceanographers say it has this year. Some meteorologists attribute the drought in the midwest to this shift. Unbalance between the Arctic and the Antarctic ice masses is assigned as a cause of the shift. The balance is likely to be restored, but the coal deposits in the Arctics indicate that the balance was once different, and it may become so again.

If the Midwest should become arid, its rivers, too, might dry up too much to furnish sufficient irrigation water. Even so, science would not be baffled, for there is another scientific research which claims to be making some progress toward pumping fresh water directly out of the ocean.

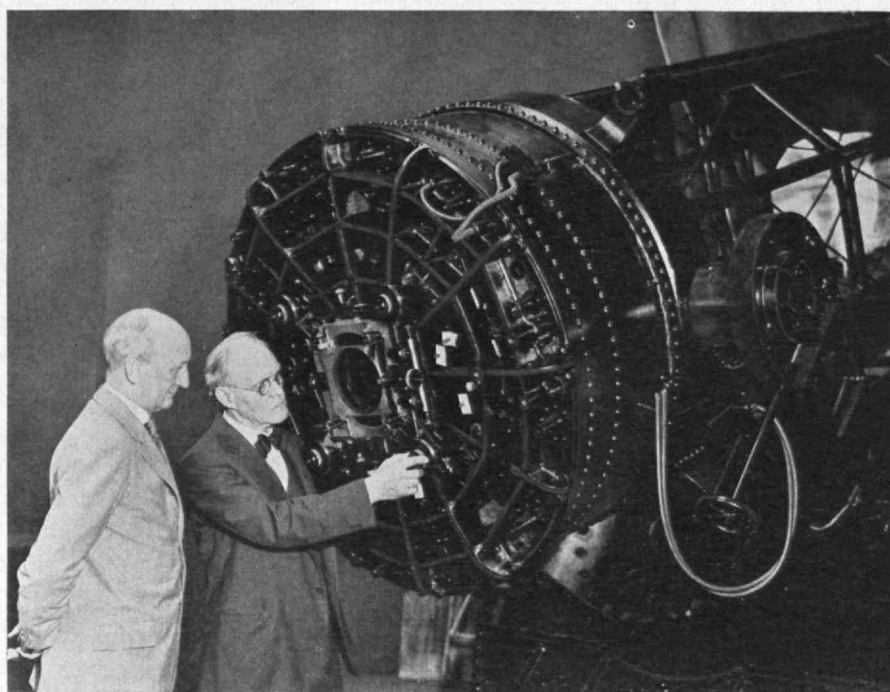
While the world has been talking about taking a scientific holiday, the scientific progress it

hoped to stop already has been made. The new machines and the new technological principles that the world professed to fear have become facts. The problem now is not merely to catch up with what we previously had, but to prepare also to overtake these new scientific advances. To accomplish that, the scientific method applied to social-economic questions offers the answer.

The scientific method is not difficult. It is not magic. Scientists do not possess better brains than other men. The scientific method is essentially no different than the one used by the world's successful leaders for thousands of years, but in science the method is more clearly defined.

Some of the untold stories of events behind the scenes in recent scientific discoveries will illustrate how the method starts. One day in a university town I met a prominent industrial scientist. He pointed out a group of college men and said: "See that young man there. He has been working with static electricity. You know, the kind that we produced by friction at high school. The kind we know all about, so that we old fellows did not think there was anything more to learn. This young man did not take our word. He has come upon an idea and I think there is something to it. I'm so enthusiastic that I am starting out to try to raise some money to help him continue his experiments."

This young man was Van de Graaff, now at the Institute. His new idea led to the man-made Olympus at Round Hill, the generator which produces 10,000,000 volts, the greatest electrical potential in the world. Van de Graaff's discovery illustrates the first principle of the scientific method: that opportunity is found in well-worn paths, and not at the end of the rainbow. I think that fact is one of the most difficult things in the world to believe. (Continued on page 372)



Air-cooled telescope newly installed at U. S. Naval Observatory in Washington. With a 40-inch mirror this telescope will photograph a greater sky area than some of the larger instruments. Adjusting the telescope is George W. Ritchey, who devised the cunning and novel curves of the mirror. Air-cooling prevents mirror distortions

Science Service

Technics As a Social Force

Lewis Mumford Provides an Ampler View of History and Technology

BY B. A. THRESHER

MOST of the current flood of claptrap writing about the "machine age" is all sail and no anchor. The solid contributions to the subject, on the other hand, whether by economists or engineers, are frequently so heavily ballasted with learning, so cautious in raising a sail to catch the winds of change, that they serve at best as awkward and lumbering vehicles for constructive thought. The craft now launched by Mr. Lewis Mumford, and by him christened "Technics and Civilization *," aims at a better balance. She has enough beam to give her stability, though her author, like a Yankee skipper, shows a tendency to crowd on sail toward the end of the voyage. She bowls along smartly enough through the trades, but if it comes on to blow in the China seas, she may carry away her topgallants before she makes Hong Kong.

Mr. Mumford has handled the theme of technics as a social force with rare imagination and insight, supported by wide study of the sources. Only as he turns toward the future does he succumb to a degree of wishful thinking which carries him beyond the realities of economics and politics. The book reenacts the revolt of the artist and critic against the sordidness and stupidity of gainful endeavor. Ruskin and Morris seem here to have arisen again and with an ampler view of history and technology reaffirmed that "there is no wealth but life."

To begin with, there is an attempt at precision and differentiation of terms which might well have been developed more fully. "The essential distinction between a machine and a tool lies in the degree of independence in the operation from the skill and motive power of the operator: the tool lends itself to manipulation, the machine to automatic action. . . . Moreover, between the tool and the machine there stands another class of objects, the machine tool: here, in the lathe or drill, one has the accuracy of the finest machine coupled with the skilled attendance of the workman. . . . From the beginning, the machine was a sort of minor organism, designed to perform a single set of functions.

"Along with these dynamic elements in technology there is another set, more static in character, but equally important in function." These elements are distinguished as *utensils* (such as the basket and pot), *apparatus* (such as the dye vat and brick kiln), and *utilities* (such as reservoirs, aqueducts, roads and buildings). "In the series of objects from utensils to utilities there is the same relation between the workman and the process that one notes in the series between tools and automatic machines: differences in the degree of specialization, the degree of impersonality. But since people's attention is directed most easily to the noisier and more active parts of the environment, the rôle of the utility

and the apparatus has been neglected in most discussions of the machine, or, what is almost as bad, these technical instruments have all been clumsily grouped as machines. . . . When I use the word machines hereafter I shall refer to specific objects like the printing press or the power loom. When I use the term "the machine" I shall employ it as a shorthand reference to the entire technological complex. This will embrace the knowledge and skills and arts derived from industry or implicated in the new technics, and will include various forms of tool, instrument, apparatus and utility. . . ."

These distinctions are not merely formal, but concern the very gist of the author's essential contribution to the study of technics as a social force. The shallow identification of technology with machines alone is explicitly avoided. Gone is the popular stereotype of the machine as a clanking, inhuman monster. There are adumbrations of Samuel Butler's concept of the machine as an extension of the human body, but with none of that mechanophobia which characterized the people of Erewhon. Technics is shown to have outgrown the Frankenstein-Juggernaut phase. It appears as a complex in which mechanical elements form a minor, perhaps a diminishing part, while chemical, electrical and above all biological elements coöperate to reinforce the motions of the human spirit. The picture of man bound to the machine, and forced into step with its unvarying pace is shown as characteristic only of an imperfect technics which has not become adapted to the more subtle and intricate organic rhythms of man in society. As technics advances, the spectacular mechanisms are frequently displaced by simpler and more direct devices which reach the same end with much less fuss. "The fact is that an elaborate mechanical organization is often a temporary and expensive substitute for an effective social organization or for a sound biological adaptation. . . . Just as the ingenious mechanical restorations of teeth begun in the Nineteenth Century anticipated our advance in physiology and nutrition which will reduce the need for mechanical repair, so many of our other mechanical triumphs are merely stopgaps to serve society whilst it learns to direct its social institutions, its biological conditions, and its personal aims more effectively. In other words, much of our mechanical apparatus is useful in the same way that a crutch is useful when a leg is injured. . . . The common mistake is that of fancying that a society in which everyone is equipped with crutches is thereby more efficient than one in which the majority of people walk on two legs." This is the note which one misses in most uncritical histories of invention.

Mr. Mumford sees technics, not merely as a much broader complex of forces than has been popularly supposed, but as a social phenomenon as well. "No matter

* *TECHNICS AND CIVILIZATION*, by Lewis Mumford. \$4.50. 495 pages. New York: Harcourt, Brace and Co.

how completely technics relies upon the objective procedure of the sciences, it does not form an independent system like the universe: it exists as an element in human culture and it promises well or ill as the social groups that exploit it promise well or ill. The machine itself makes no demands and holds out no promises; it is the human spirit that makes demands and keeps promises. In order to reconquer the machine and subdue it to human purposes, one must first understand it and assimilate it. So far, we have embraced the machine without fully understanding it, or, like the weaker romantics, we have rejected the machine without first seeing how much of it we could intelligently assimilate."

Among the most ingenious parts of the work are the earlier sections describing the "cultural preparation" for the machine, and the "agents of mechanization." "The clock, not the steam engine, is the key-machine of the modern industrial age. . . . When one thinks of time, not as a sequence of experiences but as a collection of hours, minutes, and seconds, the habits of adding time and saving time come into existence. Time took on the character of an enclosed space; it could be divided, it could be filled up, it could even be expanded by the invention of labor-saving instruments." Similarly, the monasteries were not merely nurseries of learning and the practical arts, but by their clock-like regimen "helped to give enterprise the regular collective beat and rhythm of the machine." Spatial measurement developed along with temporal. The painters, from Paolo Uccello onward, developed perspective, while the cartographers imposed the network of latitude and longitude upon the globe. A frame of reference was developed for space and time.

The influence of capitalism reinforced this quantification of life. "Whereas the procedures of science were not refined and codified until after Galileo and Newton, finance had emerged in its present day dress at the very beginning of the machine age; Jacob Fugger and J. Pierpont Morgan could understand each other's methods and point of view and temperament far better than Parocelsus and Einstein." Protestantism played its part in uniting the ideas of industry and godliness (though here Mr. Mumford perhaps relies too uncritically on the thesis popularized by Max Weber). Magic and the work of the alchemists provided still another aspect of the preparation, by turning men's minds, however naively, toward the external world and the means of manipulating it. Regimentation for military purposes developed the arts of organization which were later to be turned to productive account.

So much for the basic preparation. The main scheme of periodization adopted is an extension of that originated by Patrick Geddes; the "eotechnic" phase, roughly from 1000 to 1750 A.D. was one of slow change, but represented substantial technical achievement. There was considerable use of non-human sources of energy,



Crescendo, a photograph of refracted light

Edward Quigley

made available by the iron horse shoe, by wind and water power, especially in the high development of the sailing ship. Wood was the primary material, but much of the characteristic development of the era arose from the use of glass. Textile fabrics were highly developed and knitting originated. Mining was of distinctly secondary importance.

With the Industrial Revolution, the paleotechnic phase of "carboniferous capitalism" appeared. "One is dealing with a technical complex that cannot be placed within a time belt; but if one takes 1700 as a beginning, 1870 as the high point of the upward curve, and 1900 as the start of an accelerating downward movement, one will have a sufficiently close approximation to fact." The degradation of the worker that accompanied the rise of the factory system has been often dwelt upon. Mr. Mumford does full justice to the theme, but gives no adequate picture of the prevalence of these evils in earlier times. Long hours and child labor were by no means an original product of the factory system. Much is made of the "degradation of the environment" that accompanies mining operations of all kinds. Undoubtedly the "mine and move" method has blighted many regions. Yet Mr. Mumford, writing, with nose averted, of the stench and squalor of early industrialism, is perhaps unfair. He sees the paleotechnic era as a hideous interlude between the sweetness (*Concluded on page 370*)

Permanence of Engineering Structures

ONE need be neither a pessimist nor a subscriber to the cyclical theory of history to believe that somehow, some day, our civilization will pass into the discard like its predecessors. Time may decay our cities and all their appurtenances and we can imagine in the long-distant future an archæologist of a new culture prowling among the ruins in an effort to reconstruct the major principles of our life.

It is rather chastening to consider what he is likely to find. Even if the materials of our arts, our paper, our pigments, and our metals should prove durable, which they pretty certainly will not, we should hardly expect a proper judgment of our culture based on a study of our arts. A more significant measure of our times might be made by a correct reconstruction of our engineering achievements, for it is in these rather than in our pure arts that we can lay claim to greatness.

All the more pity, then, that the materials of these projects bid fair to die pretty rapidly after their users. The two principal materials of large engineering construction are steel or related metals and Portland cement concrete, none of which is inherently permanent since each requires unremitting preservative treatments. Steel, of course, corrodes and will continue to do so to destruction once it ceases to be painted. The less corrodable alloys, even if they were not too expensive for use in our practical structures, are long-lived only in a relative sense. The cleaner air of a dead civilization will none-the-less deteriorate our structural metals in a very short time.

The case for concrete is not much better. Although fine grinding of cement has decreased the permeability of our reinforced concrete, there is certainly no impermeable material of this sort at present. Even if there were, temperature stresses would ultimately create the tiny crack that permits infiltration of water. In colder climates freezing and thawing would do the rest of the destructive work; in the warmer ones, the dissolution would be slower but never-the-less sure. As a matter of fact, concrete is rather thoroughly soluble in water. In

The Trend

only a brief time the calcium hydroxide constituent can be eliminated by pure water. A longer span results in removal of the essential silicates.

We recognize this, of course, and harden our concrete surfaces with various treatments of the fluorsilicate type or coat them with waterproofing membranes of bitumen. The hardeners help, but the concrete will be abraded by nature once we cease our vigilance. The asphalts may, and probably will, last and remain elastic enough so that hair cracks will not develop, but we do not use them except in certain hydraulic structures where they are unseen.

On the whole, therefore, it is unreasonable to expect that our prowling archæologist will be able to find much to remind him of our skyscrapers, our stadia, our bridges, our highways (whose beds are not substantial enough to last as did the Roman military roads).

What do bid fair to endure are our dams, our vehicular tunnels, our railroad roadbeds, and some of our underground aqueducts. It is a pity that the syphons by which we carry these aqueducts across valleys cannot remain to show how in one engineering application we have outstripped the Romans, who probably understood the principle of the syphon but lacked piping materials suitable for its execution.

Our hypothetical archæologist, if he is discerning of the fine points of engineering, will doubtless conclude that in the field of buildings and bridges we leaned to scale rather than ingenuity and that in dam building we were quite definitely superior to other contemporary peoples. He might note that we ignored the physical and æsthetic possibilities of the space framework and the parabolic arch. The latter might well be considered the first new principle of building construction since the Gothic vault. As evident in Germany today, it presents unique

opportunity for the beautiful solution of problems involving large halls. Except in our schools of architecture we will have none of it.

Even our bridges would probably seem on the whole unimaginative repetitions of long-known principles on a larger scale. Our daring, he would shrewdly surmise, lay in the spans we attempted rather than in the ingenuity of our solution. From the point of view of scale we would definitely lead. Though our archæologist may never discover the fact, since the depression we have built or are building among other bridges: the Golden Gate Bridge, with a 4,200-foot clear suspension span; the San Francisco-Oakland Bridge (10,450 feet) with its twin suspension spans of 2,310 feet, its 1,400-foot cantilever span, and its central tunnel through Yerba Buena Island; the George Washington Bridge with its 3,500-foot suspension span; the Kill van Kull Bridge (8,075 feet) with a 1,675-foot center arch,



An apt example of what Rupert Brooke called the "keen, unpassioned beauty of a great machine." Embodying lightness, strength, fleetness, beauty, the new Douglas transport (designed and built by Donald W. Douglas, '14) is now Blue Ribbon holder of the air

of Affairs

the longest in the world and longer than the Brooklyn Bridge; the three-and-a-half-mile Triborough Bridge; the George Westinghouse Bridge, with a 460-foot center span, the longest concrete arch in America; the Hackensack Viaduct; the Lorain-Carnegie Bridge in Cleveland. Meanwhile, a Little Belt Bridge in Jutland, with a maximum span of 720 feet, attracts attention, while the Strostromsbroen bridge, connecting the islands of Zealand and Falster in Denmark, will be the largest in Europe, with a total carry of two and three-quarters miles and a series of two-hinged arch spans of 440 feet, 540 feet, and 440 feet.

Except for size, however, most of these bridges might appear unremarkable to this unprejudiced critic of the future, had he any evidence of their having existed. Our ability to waste materials would be apparent in our refusal to design bridges with the refinement practised in Europe. Even the proud eye of the contemporary critic finds little to compare with the Swiss viaducts and only one or two examples of the lovely bow-string arch type. Of the large bridges mentioned above only the Westinghouse, the Kill van Kull, and the Hackensack Viaduct can be said to have real aspirations to beauty. The straight tension anchorage spans of the George Washington Bridge harm its appearance; the Golden Gate Bridge, according to pictures, is unbeautiful except in the suspension span, which is always graceful, and no amount of electric-lighting of cables and flood lighting will change its form; the Oakland Bridge has bad approaches, and cantilever sections are inevitably ugly.

Contemporary and future criticism might well unite, however, in the opinion that our dams are more happily designed. Here we have combined scale with beauty. We have fitted our dams to the landscape in a way we have rarely done with our bridges. It must be recognized at once that large dams may be large in width or height. The Dnieprostroy project, for example, is only 146 feet high and 3,350 feet long and is distinctly a major project, but the high dams, involving more daring and beauty, are more surely spectacular. Since 1929, there have been built, or authorized and commenced building, nearly 20 dams more than 200 feet high — perhaps more than existed altogether before that time. We have completed the Owyhee Dam, 405 feet high and at the moment the highest in the world, but soon to be outstripped by the French Sautet power dam of 446 feet and ultimately by the Boulder Dam, 730 feet. The Diablo Dam, 389 feet, in Washington, enjoyed championship prestige but little over a year.

These great structures — Diablo, Boulder, Owyhee, Ariel, Morena, Pine Canyon, Pa-coima, Pardee, and Coolidge — are indeed

built in variety of form. They range from filled dams, through multiple arches, Ambursen types, single arches spanning narrow canyons, to the multiple-dome principle of the Coolidge Dam. They enjoy a common beauty, a beauty of form and scale, and adaptation to surroundings. They represent concrete at its best and perhaps in its more lasting form. In Europe, in the meanwhile, the masonry dam, durable but usually less interesting, still is sovereign. France is following in our footsteps. The Sautet Dam will be a thin concrete arch and there are now building nine other dams in that country over 200 feet high; notably, the Chambon in the Alps (394 feet), the Sarrans (377 feet), and the Oued Fodda in Algiers (305 feet). Italy apparently has joined the procession, but her War Department will not release essential information. The concrete Marathon Dam in Greece is large and beautiful, is faced with marble, and uses marble as its aggregate. From Japan to California westward-bound, the world is dotted with new hydraulic structures, and depression has scarcely left its mark on them unless it be a mark of acceleration.

These dams have a fair chance of standing. Our vehicular tunnels, protected as they will be from extremes of temperature, may fill up, yet they ought to endure, and our railroad rights-of-way, slashed through hill and forest, ought to reveal their straight-stretching miles for thousands of years. Forces will wear on our beautiful dams, but their location promises a friendly climate, and there is reason to hope that our archaeologist of the future may know something of our advanced principles of dam design.

Perhaps it does not matter greatly. These structures are practical creations for the practical use of practical men and not for praise of the ultimate dead. If our dams, our tunnels, and our rights-of-way can remain in his reconstructed epic of transportation and hydraulic power, the investigator will have a far truer picture of the essentials of our culture than if he should reconstruct Rockefeller Center only to wonder what sort of a religion we practised anyway.

He may even close a well-filled notebook with a sigh, and we shall never know whether the accompanying thought was in admiration of work well done or a judg-



E. F. Porter

Mysterious and lovely forms, normally unnoticed by the eye, are permanently recorded by the camera. Here is a small carnivorous plant indigenous to New England which catches insects for food by means of sticky globules

ment upon the mighty conceit of men who thought to outwit nature. And should, perchance, a book of our time survive, he might recall Shelley's poetic account of the fate of Ozymandias, King of Kings, upon the pedestal of whose statue these words appear:

"Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.

Shifting Gears in the Air

THE controllable pitch propeller, for which Frank W. Caldwell, '12, recently received the Collier Trophy for the greatest achievement in aviation in America during the past year, had its genesis in a thesis which he submitted for the S.B. degree in Mechanical Engineering 22 years ago.

Mr. Caldwell, who is now chief engineer of the Hamilton Standard Propeller Company, has been designing propellers ever since he left the Institute. He was chief of propeller design for the Curtiss Company when in 1916 the army called him to study the failure of wooden propellers during the Mexican Border campaign. Caldwell was made chief of the army propeller service and continued in the air corps until 1928, when he resigned to accept the position he now occupies.

The great advantage
of the new propeller
over the old
fixed-pitch
type lies

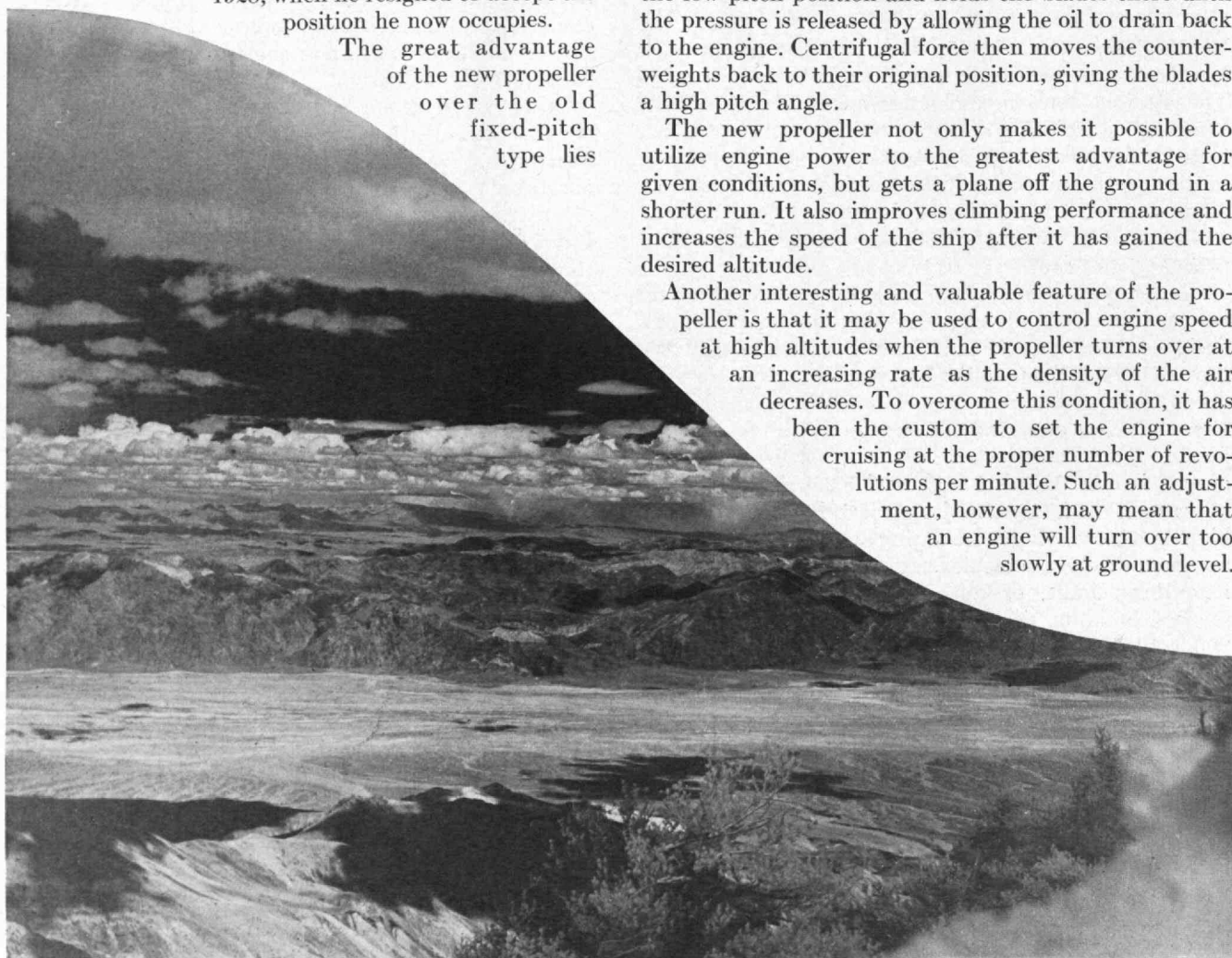
in the fact that its blades may be set at the most suitable pitch for taking off and then changed to the most efficient angle for high-speed flying. With the fixed propeller the pilot is faced with the problem of getting his ship off the ground under conditions analogous to starting an automobile in high gear. The controllable pitch propeller makes it possible in effect to start in "low" and shift to "high" after the ship gets into the air.

The Caldwell propeller now makes it possible to design airplanes that, while capable of greatly increased flying speed, would not take off safely with the fixed pitch propeller. The latter has been a compromise in which factors of power at take-off and performance in flight had to be reconciled, for a propeller with its blades set at the most effective pitch for taking off at full engine rating would allow the engine to operate at too high a revolution speed in the air.

In the controllable pitch propeller the angle of the blades is changed by a small piston operating in a cylinder built into the hub. At the base of each blade is a counterweight which moves in a slot between two stops. When the pilot wishes to set the blades at a low pitch for taking off, he pulls a small knob, much like a choke button on an automobile, which allows oil under pressure from the engine to enter the cylinder in the hub of the propeller. The pressure drives the counterweights to the low pitch position and holds the blades there until the pressure is released by allowing the oil to drain back to the engine. Centrifugal force then moves the counterweights back to their original position, giving the blades a high pitch angle.

The new propeller not only makes it possible to utilize engine power to the greatest advantage for given conditions, but gets a plane off the ground in a shorter run. It also improves climbing performance and increases the speed of the ship after it has gained the desired altitude.

Another interesting and valuable feature of the propeller is that it may be used to control engine speed at high altitudes when the propeller turns over at an increasing rate as the density of the air decreases. To overcome this condition, it has been the custom to set the engine for cruising at the proper number of revolutions per minute. Such an adjustment, however, may mean that an engine will turn over too slowly at ground level.





Harold Orne

From Mt. Washington a keen-eyed camera traverses mountains, lakes, and plain to pick up the Atlantic Ocean, 70 miles away

A series of tests with a transport plane powered with two engines showed a take-off improvement of 20% in distance and time. The rate of climb with controllable propellers in ten minutes was 14% greater than with the fixed-pitch, and the rate climb after attaining an altitude of 5,000 feet was 22% faster. When cruising in level flight at 5,000 feet the improvement in speed was 5½%, with an increase in engine power of 14½%.

These figures indicate some of the possibilities of the Caldwell propeller at a time when designers are fixing their attention on ships capable of carrying heavier payloads at increased speed. The use of this propeller also solves one of the problems of pilots starting on long-distance flights, which has been the difficulty of getting their heavily laden ships off the ground with propellers set for efficient flight performance.

Remote Control Accounting

By L. F. WOODRUFF

THE first practical application of punched-card-controlled tabulating machines was in the analysis of the United States census of 1890. The machines used in that work were developed by the late Dr. Herman

Hollerith, and since that time there has been a continual and remarkable development of machines and systems for utilizing this basic plan. Today there is hardly a large corporation in the country which does not avail itself of the accuracy and rapidity of automatic tabulating, sorting, and other punched-card equipment.

One type of large business which has lagged behind others in making use of these machines, however, has been the department store. Although the amount of detail figure work required in conducting large stores can be described by no adjective less than colossal, there has been difficulty in the economical proving in of the punched-card system because individual transactions are on the average small, and a punched-card record of each transaction needs to be used only three or four times. Consequently the expense of preparing and checking the cards, and the delay occasioned, outweighed the advantages to be gained.

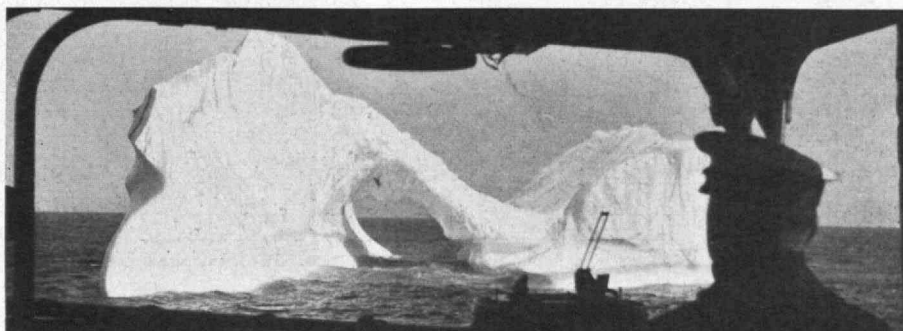
Realizing this situation, Edward Rogal, '18, and the writer, about ten years ago, undertook the development of a new machine and system whereby the use of tabulating equipment in retail stores would be extended to accomplish rapidly and with mechanical accuracy the work of sales audit, merchandise control, and accounts receivable billing, effecting a tie-in among these departments which had never before been economically possible. One phase of the development ended with the demonstration at Technology of the complete system in May, 1928, before several hundred members of the Controllers' Congress of the National Retail Dry Goods Association, who had been invited by the late President Stratton to hold one session of their national convention at Technology in order to witness this demonstration.

This meeting served to enhance the interest of the executives of the leading stores, many of whom had already generously given advice and criticism during earlier stages of the development. An invitation was extended and accepted to test the equipment and system under practical operating conditions at Kaufmann's, Pittsburgh's largest department store. A small trial installation was soon made there, and was extended the following year to include about ten per cent of the store. Several changes and modifications in the machines and system were made during the next two years. Early in 1932 a contract was signed providing for equipping the entire store with central records equipment.

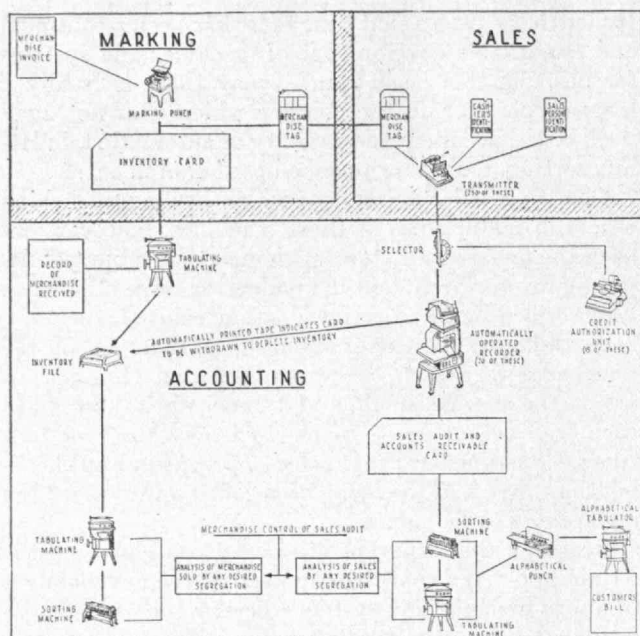
The entire installation is now largely completed in its mechanical and electrical features, and will be put into operation gradually over a period of several weeks, as the personnel is trained in its operation.

Opposite: By light ne'er seen on land or sea, Death Valley appears the more weird and fearful. An infra-red photograph from Telescope Peak showing Bad Water (235 feet below sea level) 9,000 feet below, ten miles away. In the extreme distance, Charleston Peak, Nev., 100 miles away, is visible with a rainstorm on its right flank

Right: The Ice Patrol, guardian of shipping in the North Atlantic, spots a novel specimen of iceberg architecture



Ricketts-Korth



Skeleton chart showing operating procedure of central records system for department stores. See adjacent text

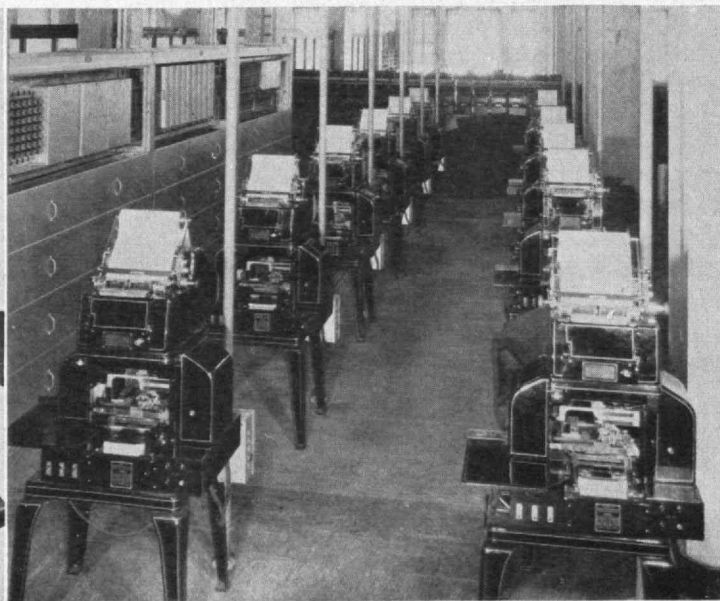
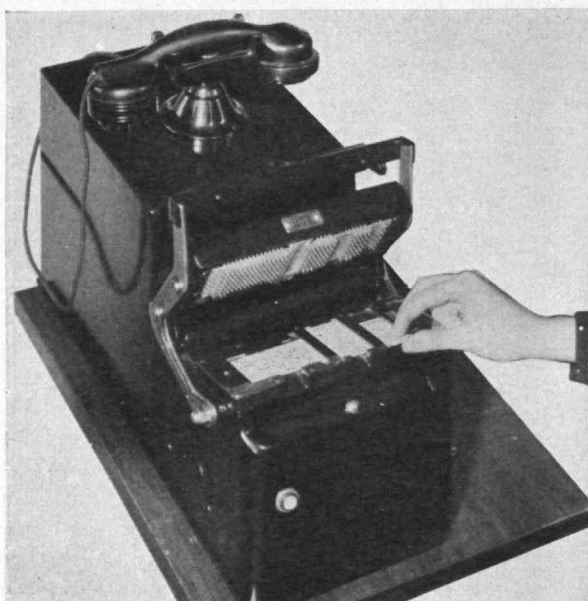
The basic operating plan of the system may be visualized best by reference to the above skeleton chart of operating procedure. In the marking room, merchandise tags and standard cards for inventory are printed and punched for all new merchandise. (There are variations in the system for different classes of merchandise, which will not be described in detail.) For goods whose value warrants the expense of unit control, an individual card and tag are prepared for each piece. After the merchandise has been tagged, it is sent to the appropriate sales department. The inventory cards are tabulated and listed, and totals checked against the invoices. The cards then go to the stock file.

When a piece of merchandise is sold for cash, the

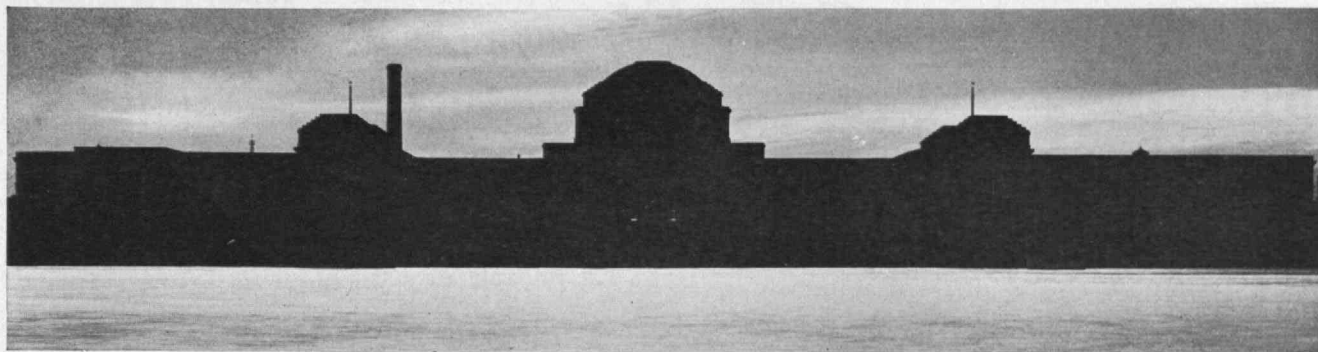
merchandise tag is torn from its stub, and the salesperson gives this, along with a punched celluloid token bearing her employee number, to the cashier. The cashier places these, together with her own identification token, in a transmitter and closes the top. Through electric wires and automatic selector switches the transmitter is immediately connected to an idle recorder in the central accounting office. All the information needed for a complete record of the sale is automatically transferred to a standard punched card, and is also printed and totaled on the recording machine.

The card so obtained is used in the preparation of the sales audit; i.e., cash on hand by cashier, sales by salesperson, and for each department, as well as for the entire store. The merchandise piece number serves as a means for identifying, in the inventory file, the punched card corresponding to the piece sold. This card is withdrawn and with similar cards serves as a basis for the analysis of merchandise sold by any desired segregation.

If the sale is a charge, the procedure is a little different. Instead of the cashier's token being used, the charge customer is asked for her shopping token, which has been punched in code with her account number. Special provision for handling transactions when the customer has failed to bring her token has, of course, been made. After the transmitter has been closed, automatic selector switches are actuated by the customer's account number punched in her token and cause the establishment of a circuit to the desk of the particular credit clerk in charge of the customer's account. A credit authorization unit in front of the clerk prints the account number and the amount of the sale. If the charge is approved, the operation of a key by the credit clerk automatically causes the establishment of a circuit between the transmitter and an idle recorder, and the punched and printed record is made in the manner already explained for cash transactions. If there is question about the approval of the charge, or if it is to be disapproved, the credit clerk operates another key which (Continued on page 375)



Left: Transmitter that sends records of all sales in the department store central records system to a central office. Right: Automatically operated recorders which punch, print, and add records of all sales



Preparing Engineers and Scientists For Greater Public Service

Technology Pioneers with an Alternative Five-Year Course Including a Wide Program of Study in Economics and the Social Sciences

RECOGNIZING the increasing social and economic significance of engineering, the Faculty and Corporation of Technology have voted to establish an alternative five-year course in which more time will be devoted to social science and economics than is now possible in the regular four-year courses. The new program, which is to begin next autumn, will be offered in nearly all the professional fields of the Institute's curriculum (Architecture already is a five-year course). The regular four-year courses will be continued.

"The new course," President Compton announced, "will include essentially the same professional studies as at present in any one of the departments of engineering or science, but will also include an increasing program of studies in the fields of economics and the social sciences running through the last three years of the five-year course. In the fifth year a considerable amount of time will be devoted to a thesis on some subject which combines the professional and economic aspects of the problem which is chosen. On satisfactory completion of the fifth year, there will be awarded the degree of bachelor of science in the professional field (such as mechanical engineering or chemistry) and also the degree of master of science in economics and engineering (or natural science).

"It was General Walker, as former President of the M. I. T., who first had a clear vision of the coming economic importance of the engineer's work and reduced this vision to practice by the introduction of economic studies into the regular program of professional training at this institution. Later, under the influence of Professor Davis R. Dewey, an offshoot of this work in economics developed into the present important and flourishing Department of Business and Engineering Administration. It is our belief that the five-year course now being established represents an-

other important step in the training of men in applied science, with a realization of the social implications of their work, and with at least an introduction to the ideas and techniques through which the social and economic effects of engineering are woven into the complex pattern of our present civilization.

"Three considerations point to the importance and timeliness of this new development in technological education. The first of these is the certainty that applied science will play an ever-increasing rôle in determining our economic and social life. The second is the increasing necessity for organized coöperation, with economic and social controls, whether along the lines of the 'New Deal' or on some different basis, but which in any case creates an urgent demand for men with an engineering training and a broad conception of relative social values and economic processes. The third of these considerations is the desirability of developing a coöperative approach to economic problems by the engineer and the economist, in somewhat the same way as has proved so fruitful in the coöperation of the engineer with the physicist or the mathematician.

"Out of these conditions I believe that there will grow a new outlet for the engineer. Of course, there will always be a need for engineers who are highly trained in somewhat narrow specialties, and who confine their activities to creative work in these fields. Such engineers pursue highly individualistic careers. I believe that there will also be an increasing demand for men of engineering training and broad social interests in the field of public service. In any case, it is certainly true that the world needs men of first-class professional training, combined with an understanding of economic processes and a broad conception of social values. It is our hope that this new five-year course will aid in the development of men to supply this need."

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

New Field House

NO RECENT news has aroused more interest among the students than the announcement by President Compton at Commencement that Technology's old and inadequate field house is to be replaced by a new building which will nearly double the facilities for students participating in track, basketball, wrestling, squash, and other sports. The new structure is to be called the Barbour Field House in memory of the late Edmund Dana Barbour, who provided a fund now available in part for construction.

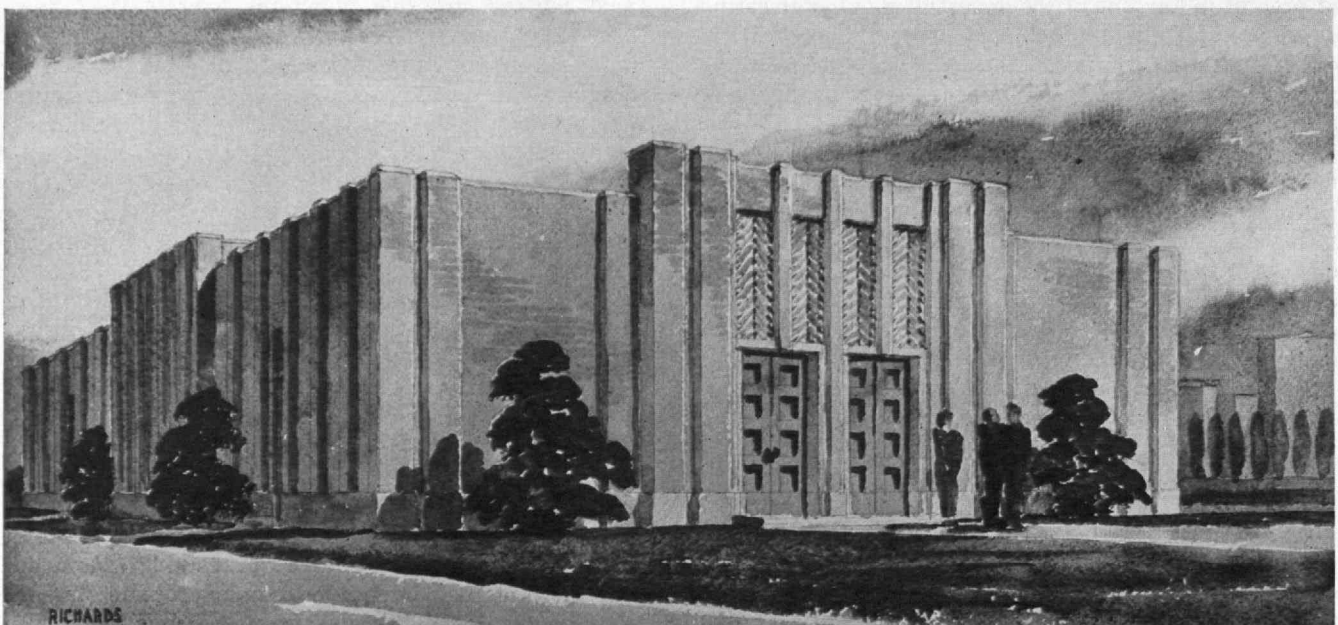
Much desired by the students and urged specifically by this year's senior class, the new field house will fill a long-felt need in the Institute's athletic facilities. Construction of the building, which is to stand on the site of the present wooden structure, has already been started, and it is expected to be ready for occupancy in September. The old wooden grandstand will be replaced by steel bleachers with seats for 1,000 spectators.

Plans for the building have been in charge of a committee appointed by the Executive Committee of the Corporation several months ago. The chairman of the committee, Horace S. Ford, had the coöperation of Dean William Emerson of the School of Architecture, Professor Walter C. Voss, Dr. Allan W. Rowe, '01, and Mr. Henry E. Worcester, '97. The design for the structure was supervised by Dean Emerson and Professor Harry W. Gardner, '94. Professor Voss will have general direction of construction, which is proceeding under the supervision of Albert V. Smith, '20, Superintendent of Buildings and Power.

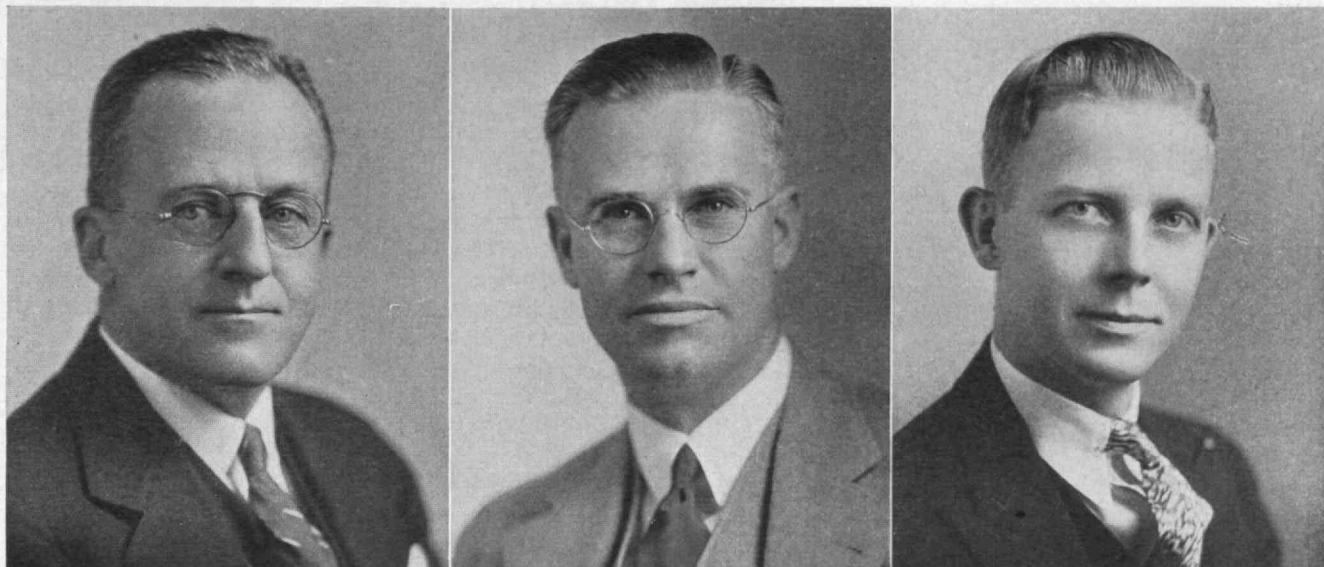
The Barbour Field House will be 152 feet long and 48 feet wide in plan, and one story high. The main foundation and ground floor structure will be of reinforced concrete. The roof will provide individual skylights for every room in the building. There will be no windows in any of the walls, thus allowing a straightforward and attractive architectural treatment. The entire exterior will be faced with yellow pressed brick of a Flemish and English cross-bond pattern, resting upon a base of granite cast stone. The structure will thus harmonize with the other Institute buildings near which it will stand.

Facilities will include nearly 1,000 lockers; two large rooms for visiting teams with individual services and showers; a large room with 24 showers surrounding a draining platform designed for maintaining the highest degree of sanitation; a large rubbing room containing two tables and every necessity for conditioning athletes; and separate quarters for coaches with private showers and toilet facilities.

No paint will be used in the interior of the building, simplicity of maintenance being afforded through the use of cream-faced brick above a concrete dado. All partitions will be constructed to facilitate maintenance of the best conditions of sanitation. Ideal ventilation will be assured by forced-draft fans, exhausting through the roof, the ventilating system being designed by Assistant Professor James Holt, '19. Associate Professor Carlton E. Tucker, '18, has laid out the electrical system and the contract for the construction of the building has been awarded to Chase and Gilbert (Royce W., '09) of Boston.



Barbour Field House, now under construction for completion by September. Inevitably, it will be the "Barber Shop" to appreciative students, upon whose recommendation the building was authorized by the Corporation. From a rendering by G. Thayer Richards



M. I. T. Photos

Treasurer

Bursar

Assistant Bursar

Left to right: Horace S. Ford, Institute Treasurer, member of Corporation; Delbert L. Rhind, new Bursar; Wolcott A. Hokanson, new Assistant Bursar

Presidential Peregrinations

AT THE conclusion of Technology's graduation exercises (see below), President Compton hurried to Bryn Mawr College, where on June 6 he delivered the commencement address on "A Place for the Natural Sciences in National Planning" (see page 344). Two days later he arrived in Northfield, Vt., to address the graduating class of Norwich University.

On June 18 Dr. Compton was in Madison, Wis., where he received the honorary degree of doctor of laws at commencement exercises at the University of Wisconsin. Thence he hurried westward to Berkeley, Calif., to the summer meeting of the American Association for the Advancement of Science from June 21 to 23. By flying back East he was able to catch important conferences in Cambridge and Washington after which he joined Mrs. Compton for a leisurely automobile trip through the western national parks.

Financial Officer

BURSAR HORACE S. FORD, whose able administration of the business affairs of the Institute has contributed notably to its development in the past 20 years, has been elected Treasurer of the Institute and a member of the Corporation. Mr. Ford's election to the post, described in the by-laws as "financial officer of the Institute," which includes membership on the Executive and Finance Committees of the Corporation, came at the meeting of the Corporation on June 5. He now assumes the responsibilities of the late Everett Morss, '85, who as Treasurer gave many years of distinguished service to Technology.

Delbert L. Rhind, who since 1921 has been Assistant Bursar, succeeds Mr. Ford, and Wolcott A. Hokanson, long a member of the accounting staff, becomes Assistant Bursar.

Mr. Ford is a native of Gloucester, Mass., where he was educated in the public schools and graduated from

the high school in 1902. The death of his father caused him to relinquish plans to enter Harvard, for which he had prepared, and he accepted a position with the New England Trust Company. In 1903 he joined the staff of the Old Colony Trust Company and after experience in various departments, became assistant cashier in 1911.

In 1914, on the recommendation of George W. Grant of Salem, then cashier of the Old Colony Company, Mr. Ford was elected Bursar of Technology. At that time the new buildings in Cambridge were under construction and the growth of the greater Technology had become apparent. In addition to his duties as Bursar, Mr. Ford spent much time on the site of the new buildings in order to familiarize himself with every detail of the structure. As Bursar he has been directly in charge of the business administration of Technology in all its phases, and also serves on various committees, alumni and academic as well as administrative.

Aside from administrative affairs, Mr. Ford is unofficial financial and business adviser extraordinary to the students, who know him affectionately as "Uncle Horace." From the bewilderments of their freshman year until graduation, he is the banker who solves their financial problems, the genial landlord of the dormitories, and a friend who listens well and encourages them wisely in their undertakings. Youthful officers of undergraduate activities, struggling with the intricacies of accounting and annual budgets, invariably seek the Bursar's office for expert advice and reassurance. Not only to the students, but to many of the younger members of the staff, "Uncle" Horace Ford is philosopher and business counselor in one.

Mr. Ford has been Secretary and Treasurer of the Eastern Association of University and College Business Officers for many years. He is a director of the Harvard Coöperative Society, Inc., a trustee of the Home Savings Bank of Boston, and a member of its auditing committee. He is a member of the Engineers Club and an associate member of the Harvard Faculty Club.



Keystone

Before the academic procession at graduation. From left to right: Vice-President and Dean of Engineering Vannevar Bush, '16, Governor Joseph P. Ely of Massachusetts, President Karl T. Compton, Science Editor of the Associated Press Howard W. Blakeslee, Chief Marshal Alexander Macomber, '07

In 1907 Mr. Ford married Mary Frances Currier. They have two sons, Philip, a junior in the Brookline High School, and Horace S., Jr., '31, whose six-weeks-old daughter, Carol, is the Fords' first grandchild.

In keeping with his New England background, Mr. Ford is a devotee of outdoor recreation and is particularly fond of the mountains and the Maine seashore. His recreation at the Institute is squash.

Mr. Rhind, Technology's new Bursar, also received his early business training in the Old Colony Trust Company, and it was also upon the recommendation of Mr. Grant that he came to Technology. He was born in North Attleboro, the son of Alexander Rhind, and later came to Boston, where he was educated in the public schools. He was graduated from the Dorchester High School in 1907, and in 1909 he joined the staff of the Bay State Trust Company, which in 1914 was consolidated with the Old Colony Trust Company.

In 1917 Mr. Rhind enlisted in the United States Navy, serving until 1918, when he was honorably discharged with the rank of ensign. He returned to the Old Colony Trust Company and remained there until his appointment as Assistant Bursar of M. I. T. He is married and has two children.

Mr. Hokanson, who is now Assistant Bursar, is a native of Everett, the son of the late Anders Hokanson. He was educated in the public schools of Everett, and joined the staff of Technology in 1915. He has been promoted through the various duties of the accounting department of the Institute and has been chief accountant for some time.

Mr. Hokanson is a former President and Secretary of the M. I. T. Employees Mutual Benefit Association. In 1930 he was elected Treasurer of St. Stephen's Episcopal Church in Quincy and last year was Secretary of the vestry. In 1932 he was elected master of the Richard C. Maclaurin Lodge of Masons and was its Secretary in 1933. He is also Treasurer of the M. I. T. Square and Compass Club.

Sixty-Seventh

HIGH NOON of Tuesday, June 5, found President Compton at Symphony Hall formally undertaking in the presence of a capacity audience to recognize 15 new doctors of philosophy and 11 of science, 152 new masters of science (11 of whom were already officers of the Construction Corps of the Navy), 21 bachelors in architecture and 460 of science, and three recipients of the Certificate in Public Health. Deducting for 23 of the foregoing, who received two degrees, yields 639 as the total number in the 1934 Commencement group.

Candidates for advanced degrees were presented to President Compton by Dean H. M. Goodwin, '90, those for the S.B. from Engineering Courses by Dean V. Bush, '16, those from Science Courses by Dean S. C. Prescott, '94, and those from Architecture by Dean W. Emerson.

The award of diplomas at this Sixty-Seventh Commencement followed an invocation by Dean Willard L. Sperry of the Harvard Divinity School; the principal address by Howard W. Blakeslee, Science Editor of the Associated Press (see page 347); and brief remarks by Brigadier General Alston Hamilton (who later presented commissions in the Officers Reserve Corps to 105 members of the graduating class), and Rear Admiral Henry H. Hough, Commandant of the First Naval District.

Alexander Macomber, '07, as Chief Marshal, led the Academic Procession which included, besides members of the Corporation and Faculty, 21 of the 50-year Class of 1884, the President and Secretary of the 25-year Class of 1909, and the following distinguished guests: The Governor of the Commonwealth, the Mayors of Boston and Cambridge, and Hon. Redfield Proctor, '02, President of the Alumni Association.

In conformity to custom the last to receive their diplomas were the President of the Senior Class, Richard Bell of St. Louis; the First Marshal, Henry D. Humphreys of Brookline; the Second Marshal, G. Kingman Crosby of Glen Ridge, N. J.; and the Third Marshal, Edgar B. Chiswell, Jr., of Washington.

Other events of Senior Week included: the Class Dinner on June 1, the principal speakers being President Compton and Professor Robert E. Rogers; the Pops Concert on June 2; the Baccalaureate by the Reverend Arthur L. Kinsolving at Trinity on June 4; the Stratton Prize Competition, Class Day Exercises, and Tea Dance on June 4; and the President's Reception to the Graduating Class on the afternoon and the Senior Prom on the evening of Commencement Day.

Winners of the Stratton Competition, which Dr. Albert C. Dieffenbach of the *Transcript*, Dean William M. Warren of Boston University, and Mr. Proctor judged, were: First, Joseph Kaminsky, '34; Second, Gordon K. Burns, '34; Third, Samuel W. Joel, '34.

At the Class Day exercises, held in the Main Hall of Walker Memorial, Joseph L. Seligman, Jr., presided and Richard Bell accepted the 1934 Class Banner from President Proctor and Professor Charles E. Locke, '96, as representatives of the Alumni Association. In turn, Mr. Bell presented the Senior Class ring to W. H. Stockmayer, President of the Class of 1935, and Proctor Wetherill presented gifts on behalf of the Senior Week Committee to various classmates who had distinguished

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themselves during their undergraduate careers. The principal addresses were by W. Randolph Churchill, who delivered the Beaver Oration, and Dr. Allan Winter Rowe, '01, former President of the Alumni Association, who, in the course of his felicitous remarks, made mention of the attendance at Class Day of the representatives of some 30-odd alumni classes, this year invited for the first time.

Dr. Bush to England

VICE-PRESIDENT Vannevar Bush has been invited by the British Committee to address the Fourth International Congress of Applied Mechanics, which is to be held this month at the University of Cambridge. He will discuss "Recent Developments in Analyzing Machines," including the current work on the differential analyzer, the colorimeter of Professor Arthur C. Hardy, '18, and other analytical machines developed at Technology.

With the aid of Dr. Bush and other members of the Institute staff, several models of the differential analyzer are now under construction in various parts of the world. Professor Svein Rosseland, Director of the Astrophysical Institute in Oslo, Norway, is at work on an instrument for use in astronomical calculations, particularly in the study of variable stars. At the University of Manchester in England, Dr. D. R. Hartree is building one for wave mechanics work in atomistics. Still another is being constructed at the University of Pennsylvania for purposes of general analysis.

In the meantime, the original instrument developed at Technology has undergone constant improvement, and plans are now under way for the installation of automatic following of curves, utilizing the servo-mechanism (see The Review for July, 1933, p. 336) developed by Professor Harold L. Hazen, '24.

Professorial Exchange

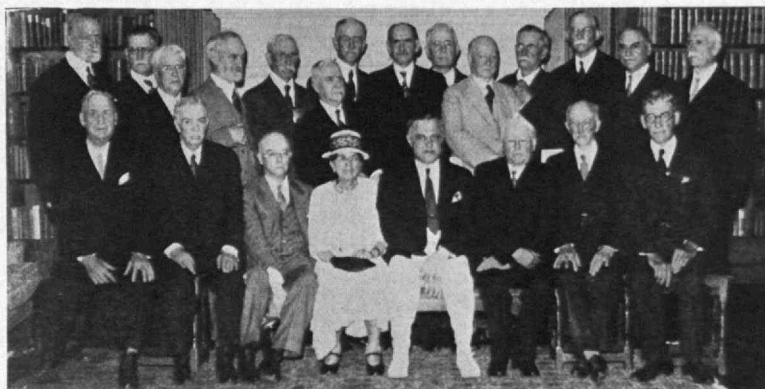
THE plan, described in these pages last December, to broaden the experience and educational outlook of members of the Faculty and to disseminate widely the best pedagogical methods as they are developed in various institutions will go into effect this autumn with the first of a series of exchange professorships.

Professor Harold L. Hazen, '24, of the Department of Electrical Engineering goes to Ohio State University, which is sending Professor J. F. Byrne to the Institute. The Department of English and History is sending Professor William C. Greene to Stevens Institute of Technology, which has designated Professor John P. Fife for the post at Technology.

Faculty Appointments

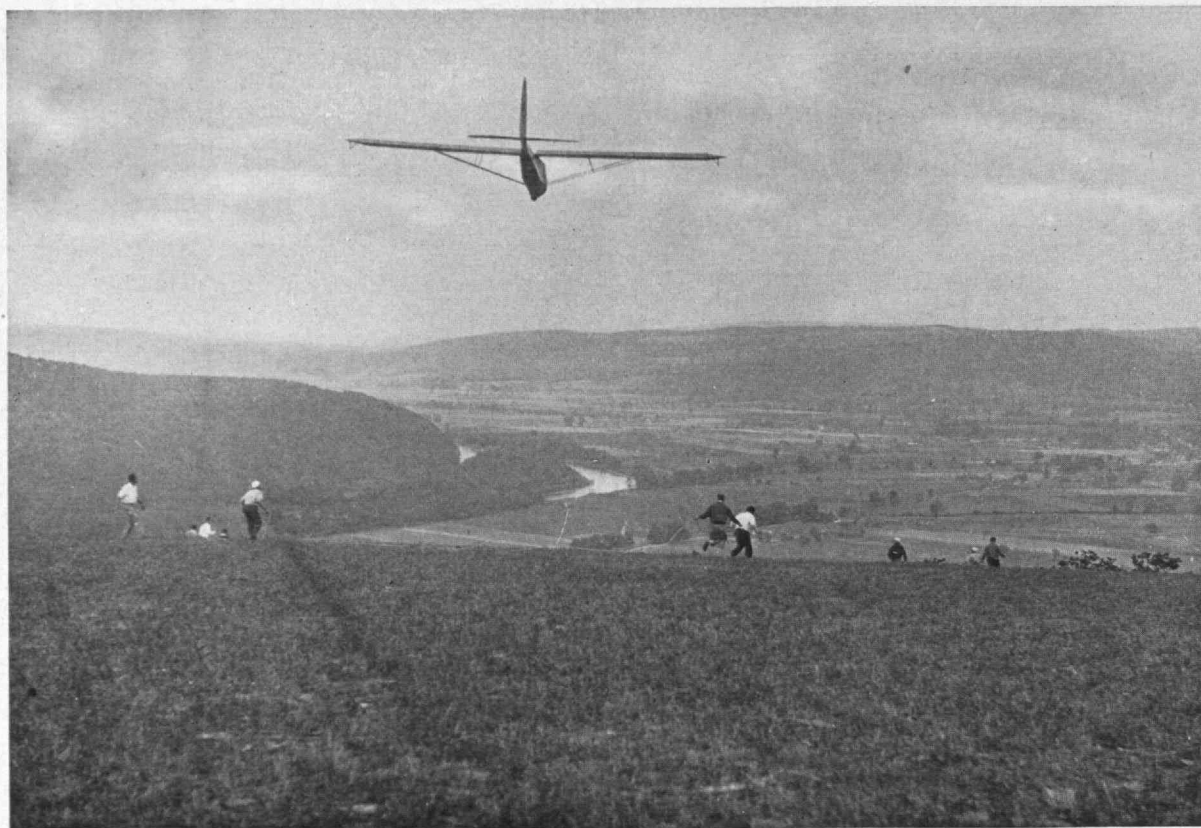
THE appointments of Dr. Warren J. Mead, distinguished geologist of the University of Wisconsin, as Head of the Institute's Department of Geology, and that of Walter G. Whitman, '17, Associate Director of research of the Standard Oil Company of Indiana, as Head of the Department of Chemical Engineering have been announced by President Compton. Other new members of the staff include Alfred V. deForest, '12, eminent research engineer of Bridgeport, Conn., who will come to Technology as Associate Professor of Mechanical Engineering, and Edwin S. Burdell, '20, of Ohio State University, who becomes Associate Professor of Sociology in the Department of Economics and Social Sciences.

Dr. Mead succeeds Dr. Waldemar Lindgren, who retired last year with the rank of Professor Emeritus



Frank E. Colby — Boston Evening Transcript

After participating in the Commencement Exercises, the Class of 1884 attended a luncheon which President and Mrs. Compton gave in its honor at their home on Charles River Road. Front row (left to right): Fred L. Bardwell, Franklin B. Richards, Augustus H. Gill, Mrs. Samuel T. Maynard, President Compton, Alfred O. Doane, Charles E. Miller, Daniel L. Coburn. Back row: Henry D. Bennett, Frederick M. Stuart, Harry W. Tyler, William L. Puffer, Hiram G. Hammett, Theodore W. Robinson, George L. R. French, George F. Lull, Samuel S. Dearborn, C. Snelling Robinson, Charles O. Prescott, Roscoe L. Chase, William M. Whitney, and Alfred L. Fitch



A Technology glider soaring during a national meet at Elmira, N. Y. The Division of Meteorology has made notable contributions to gliding by its studies of aërological conditions

after a distinguished career. Since that time Dr. Hervey W. Shimer, a member of the teaching staff for more than 30 years, has been Acting Head of the Department. Born in Plymouth, Wis., Professor Mead was educated at the University of Wisconsin, from which he was graduated in 1906 with the degree of bachelor of science. He received his master's degree in 1908 and his doctorate in 1926. He has been a member of the Faculty of the University of Wisconsin since 1906 and Professor of Geology since 1918.

Professor Mead has carried on a distinguished practice as a consultant in mining, economic, and engineering geology for more than 25 years. He has been consultant to the Panama Canal Commission in connection with the problem of earth slides in the famous Gaillard Cut, and has served as advisor on various projects of the United States Engineer Corps of the War Department. He was a member of the Colorado River Board appointed by President Coolidge to determine the feasibility of the Boulder Dam project, and earlier conducted an investigation of the coal and iron deposits of Manchuria for the South Manchurian Railroad.

Professor Whitman succeeds the late Professor William P. Ryan, '18, who died in June, 1933. Since that time, Dr. Warren K. Lewis, '05, has directed the affairs of the Department as Acting Head.

A native of Winthrop, Mass., Professor Whitman was educated in the public schools of Winthrop and at Technology, from which he was graduated in 1917 with the degree of bachelor of science. In 1920 he was awarded the master's degree. He served as an assistant in the Department of Chemical Engineering at the

Institute for one year and as an instructor for two. He was then appointed Assistant Professor and Director of the Bangor station of the School of Chemical Engineering Practice when it was established in 1920. In 1921 he became director of Technology's Boston station of the practice school, and a year later was appointed Assistant Director of the Research Laboratory of Applied Chemistry.

Professor Whitman joined the staff of the Standard Oil Company of Indiana in 1926, and soon after was appointed Assistant Director of Research. His appointment as Associate Director came in 1930. His outstanding scientific contributions have been made in the fields of corrosion and the absorption of gases by liquids. In both of these subjects, he was the first to appreciate the extent to which the results are controlled by processes of diffusion. In the study of the corrosion of iron, he discovered the influence of the corrosion conditions, particularly as regards neutrality, on the character of the rust film that forms on the surface of the metal. He demonstrated the importance of this film in retarding further corrosion by slowing up the diffusion of the oxygen of the air to the metal, without which corrosion ceases. He laid the basis of the so-called two-film theory of absorption.

These developments have for the first time placed the problems of design on a sound engineering basis and have contributed largely to increased efficiency in operation in many industries.

Mr. deForest's special field at Technology will include study of the dynamic properties of metals, particularly the strength of full-size parts, and the relation between

design, metallurgy, and application of load in modern machinery; the forces which produce and the factors that limit resonant vibrations; and new test methods and measuring instruments. His investigations are expected to lead to the establishment of a laboratory in which the knowledge and experience of the machine designer, the metallurgist, and the physicist can be focused on the working properties of machine materials.

Following his graduation from the Institute in 1912, Mr. deForest was employed by the New London Ship and Engine Company for a year, after which he accepted appointment as instructor in engineering at Princeton University, where he remained until 1915. From 1916 to 1918 he was associate research engineer of the Union Metallic Cartridge Company, and from 1918 to 1928 he was research engineer of the American Chain Company. Since then he has been a consulting engineer.

Professor Burdell is well known for his work as a member of the Ohio State Relief Commission staff in organizing the Ohio Emergency School Administration. He is also a former member of the Ohio State Commission on Unemployment Insurance and former Chairman of the municipal housing committee of the city of Columbus. While an undergraduate at the Institute, he served as editor-in-chief of *The Tech* and in recent years he has been a frequent contributor to *The Review*. He was awarded his master's degree at Ohio State University in 1929. In 1922 he taught in the Department of English and History at Technology, and last winter delivered a series of lectures in the course in city planning. He has devoted much study to the sociological problems of urban areas.

Faculty Retirements, Leaves of Absence

AFTER many decades of notable service to the Institute, three distinguished members of the faculty were retired this June with the title of Professor Emeritus. They are Professors Augustus H. Gill, '84, of the Department of Chemistry; Frederick S. Woods, Head of Mathematics; and Charles F. Park, '92, of the Department of Mechanical Engineering.



M. I. T. Photo

Flowering crab-apple tree in Lowell Court almost luminescent in the afternoon sun. The tree, a gift of the late Everett Morss, '85, is over 100 years old

Professor Gill this year rounds out a half century as a member of the Institute staff, having been appointed an assistant immediately following his graduation. He has served as a full professor since 1909. Professor Park relinquishes his post at Technology in order to devote his full attention to the Lowell Institute School, which he originated and has directed since its organization in 1903. He retires after 42 years on the teaching staff at Technology, where since 1911 he has served as Director of the Mechanical Laboratories.

Dr. Woods came to the Institute in 1890, and became Professor of Mathematics in 1906. From 1931 to 1933 he was Chairman of the Faculty, and for the past four years has headed the Department of Mathematics.

Leaves of absence for the year 1934-35 have been granted to Professors Jesse Douglas and Dirk J. Struik of the Department of Mathematics. Professor Arthur T. Robinson of the Department of English and History will be absent during the second term.

Six Mechanical Options

CHANGES in the course in Mechanical Engineering at the Institute whereby the fourth year is divided into six optional fields of study will go into effect next fall. The new curriculum offers options in automotive, power, refrigeration and air conditioning, production, and textile engineering, as well as a general option for students who desire a broad training and for those who expect to engage in graduate study. All the options include a certain amount of elective time, thus making it possible to select courses of special interest. The new system was adopted in recognition of the growing scope and complexity of mechanical engineering, and the difficulty of adequately covering its many important fields in the usual four year course.

Outstanding Athletes

RICHARD BELL of St. Louis, President of the Class of 1934, leaves behind him at Technology not only an excellent scholastic record, but a list of Institute



M. I. T. Photo

Great convocation of students and staff in Eastman Court on May 4. Dean Vannevar Bush, '16, addressed the gathering from the colonnade

track records unequalled in recent years. He has been Intercollegiate and New England sprint champion, and an outstanding runner in many special races.

In his freshman year Bell ran the 220-yard event in 22.4, and later in his career established a varsity record of 5.6 for the 50-yard dash, and 33.8 for 300 yards. He also established a record of 10.6 for the 100-yard dash, but that time has been bettered by David S. McLellan, '37, of Newton, Mass., who ran the distance in 10.2 seconds.

With Bell's graduation, the torch passes to outstanding athletes of the incoming junior and senior classes. Notable among them is Morton M. Jenkins, '35, of Watertown, who this spring won the New England Intercollegiate mile at Springfield, and Stanley T. Johnson, Newton, son of S. K. ("Doc") Johnson, trainer of Technology athletes for many years. Johnson placed second in the broad jump at this year's I. C. 4A's at Philadelphia, and in so doing shattered his own Technology record. The Class of 1937 likewise promises to distinguish itself in future track activities.

In other sports there were notable accomplishments. John J. Carey, '34, won the Intercollegiate boxing title in the 145-pound class and Gilbert A. Hunt, '36, the New England Intercollegiate Tennis Championship.

Plotting the Winds

MEMBERS of the Division of Meteorology are participating in the annual gliding and soaring contests sponsored by the Soaring Society of America at Elmira, N. Y., from June 23 to July 8. For two weeks previous to the meet, the group made careful studies of aerological conditions, including studies of upper air convention conditions upon which the success of the flights depends to a great extent. This is the third successive year that the M. I. T. staff has coöperated in this unique meteorological service.

Dr. Karl O. Lange is in charge of the party, and is serving as meteorological advisor to all contestants. Steven Lichtblau and Jerome Namias, both of whom have been carrying on graduate work at the Institute, are forecasters, while Christos Harmantas, '25, is assistant to Dr. Lange. E. A. Murphy is in charge of radio communications, which includes daily recording of weather reports from the government radio stations.

Henry B. Harris, '33, research pilot of Technology's weather plane, flew the ship to Elmira for a series of daily observation flights to an altitude of 16,000 feet, which were supplemented with regular pilot balloon observations. A full meteorological program is being carried out. Master weather charts are issued twice daily, supplemented with hourly auxiliary charts. There are also detailed local weather forecasts, particular attention being paid to soaring conditions. For the second year the National Aeronautic Association has appointed Dr. Lange and Mr. Harmantas official calibrators of the contestants' barographs.

[As The Review goes to press word comes that Lieutenant Harris was instantly killed at the Elmira airport on June 15 when the tow car he was driving over-

turned. "Lieutenant Harris was one of the most beloved of the local airmen," said the Boston *Transcript*. "In 1931 he joined the Institute as chief pilot for the M.I.T. weather survey plane. Every morning, through good and bad weather, he flew to 16,000 and 17,000 feet to collect the rare meteorological data. His flights were extremely fatiguing, but Harris's perfect physical condition permitted him to ascend to high altitudes without any harmful effect. He was a large pilot, in fact, one of the tallest in Boston aviation. He was often likened to Colonel Lindbergh.

"Just recently Harris was elected governor of the National Aeronautic Association in Massachusetts. He was active in the Aero Club of Boston and his suggestions have often been incorporated in improvements in New England aviation. He was a brilliant speaker . . ."]

Alumni Elections

IN APRIL The Review announced that Charles E. Smith, '00, was the sole nominee to the Presidency of the Alumni Association for 1934-35; Marshall B. Dalton, '15, to the vacant Vice-Presidency; Harold B. Richmond, '14, George W. Treat, '98, and Franklin T. Towle, '08, to membership on the Executive Committee; and that William R. Hedge, '96, Willis S. Harrington, '05, James M. Barker, '07, and Donald G. Robbins, '07, were the sole candidates for four term membership vacancies on the Corporation. Report can now be given that these nominations were ratified by alumni ballot, and that, in addition, the following were elected to positions as specified:

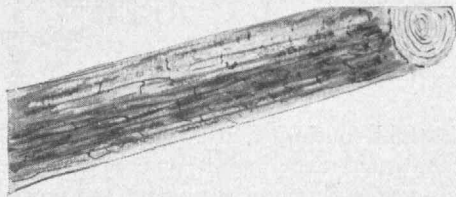
District To National Nominating Committee

1. Harry J. Carlson '92 (three years)
2. Frederick E. Everett '00 (three years)
3. Henry A. Fiske '91 (two years)
4. John F. Ancona '03 (three years)
5. James A. Burbank '16 (three years)
6. Francis J. Chesterman '05 (two years)
7. Ray P. Dinsmore '14 (two years)
8. Harvey M. Mansfield '83 (one year)
9. Harold O. Bosworth '02 (one year)
10. Horace W. McCurdy '22 (one year)

As Class Representatives: 1875, Thomas Hibbard; 1885, Herbert G. Pratt; 1890, Harry B. Burley; 1895, Henry D. Jackson; 1900, Ingersoll Bowditch; 1905, Sidney T. Strickland; 1910, Charles E. Greene; 1915, Azel W. Mack; 1920, Edwin D. Ryer; 1925, F. LeRoy Foster; 1930, Parker S. Starratt.

At the final meeting of the Alumni Council in May the following were elected to three-year terms on the Council Nominating Committee: Samuel C. Prescott, '94, Allan W. Rowe, '01, and Redfield Proctor, '02.

At the same Council Meeting it was voted to recommend to the Corporation the following alumni for membership on the important Departmental Visiting Committees: *Civil and Sanitary Engineering* — Arthur W. Dean, '92, Herbert T. Gerrish, '08. *Mechanical Engineering* — Frederick G. Coburn, '07, David S. Reynolds, '03. *Mining and Metallurgy* — Edwin D. Martin, '22, William H. Bassett, '91. *Architecture and Architectural Engineering* — Edgar I. (Continued on page 376)



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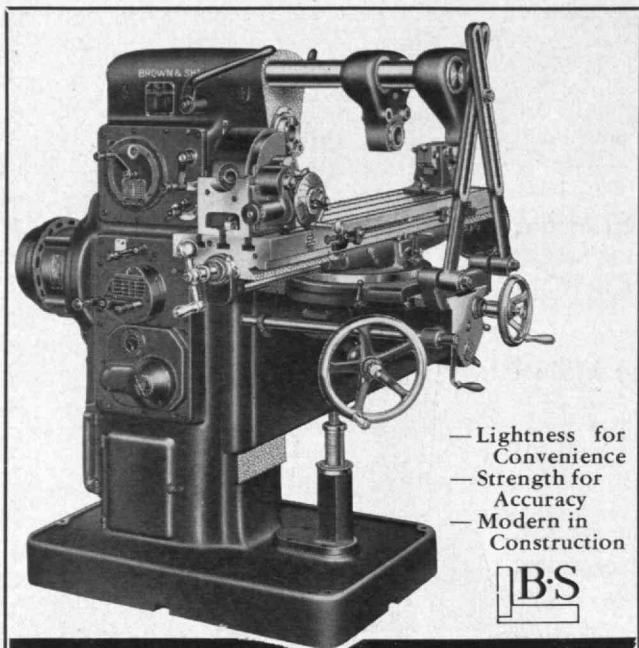
RESEARCH AS A CAREER

(Continued from page 343)

Kipling calls 'insatiable curiosity,' that drives the research man to continual experiment — he needs the habit of questioning everything, of seeing the unknown in the familiar."

It is astonishing to see how hard it is to get radical experiments tried. Most of us know too much, or rather think we do, to try them. We can give dozens of reasons why they will not work. A director soon comes to feel this so strongly that he hates to advise not trying any experiment whatever, no matter how foolish it seems to him and no matter how often it has been tried before. It probably has never been tried in exactly the same way before, with exactly the same temperature and pressure and time and atmosphere and dirt — meaning by dirt the things which weren't supposed to be there, but were. One can find so many illustrations of the important rôle played by the thing that was not supposed to be there! As one example, in our early development of ductile tungsten wire for the filament of the incandescent lamp we found that the drawn wire did not make a good lamp for operation on alternating current. Such lamps were very short-lived. Lamps made from squirted filaments were all right, but at the operating temperature, large crystals developed rapidly in the drawn wire, and on alternating current operation these crystals slipped on one another and thus led to early burn-out.

We wanted to try starting with coarser tungsten powder and found that the way to get it was by high temperature firing of the tungstic acid from which the tungsten powder was made. We tried various methods of high temperature firing of the oxide without getting any help. Finally, however, we got hold of an old batch of tungstic oxide which had been fired for a long time in a gas furnace, in a Battersea crucible. This oxide was very coarse and, on reduction, gave coarse metal powder. We made up a rod and swaged it and then heated it close to the melting-point, broke it, and examined the fracture under the microscope. Instead of showing the coarse, granular fracture to which we were accustomed, after this heat treatment, it was still extremely fine grained, leading one to expect that it would make good lamp filaments. And it did. The new result was due to something which was not supposed to be present — a very small quantity of certain refractory oxides which had vaporized from the crucible and permeated the tungstic acid. These oxide particles had remained there through the reduction and sintering and wire-drawing processes. In the operating lamp they came out of the filament only very slowly, and by their presence delayed the formation of large tungsten crystals. For a long time after the process had gone into large scale production we continued to fire tungstic acid in Battersea crucibles, having no other equally satisfactory method of getting those oxides into our wire. But we finally learned how to incorporate thorium satisfactorily with tungstic acid and so to emancipate ourselves from the uncertainty of Battersea crucibles, which were not all alike.

(Concluded on page 368)

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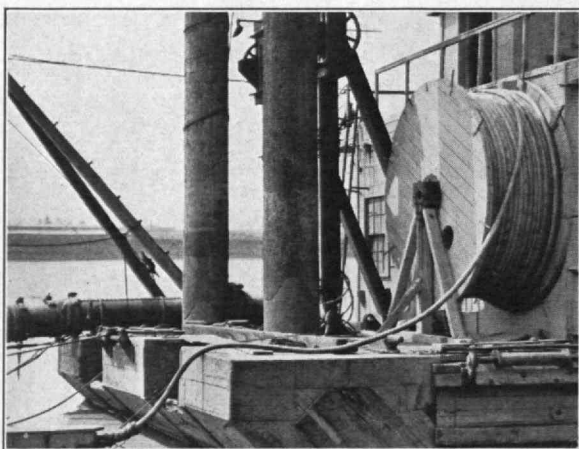


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The Institute publishes a variety of bulletins, fully descriptive of individual courses, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

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D: For information on Advanced Study and Research Work, ask for Bulletin D.

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RESEARCH AS A CAREER

(Concluded from page 366)

There is no reason why life in an industrial research laboratory should not be as pleasant as in any other laboratory. The fact of coöperation does not necessarily involve loss of individuality or loss of recognition either within the organization or outside. Patents are taken out in the name of the inventor; they have to be in this country. There are splendid facilities for work. An investigator finds himself a member of an active, studious group each of whom is interested in his field of work and talks his language. He publishes in his own name and attends scientific meetings. Finally, no matter how purely scientific his work may be, it may serve as the basis of some new product and he then has the pleasure of seeing it made useful to the public. You may think that there is a danger that useful inventions may be put on the shelf, but in my personal experience I have never known of a case which was really of that kind.

There was, I think, in earlier days the feeling that the pleasure of the work itself should be taken by the research man, whether in an industrial or a university laboratory, partly in lieu of salary. That is no longer true, however, and, generally speaking, the research man of today is paid as an engineer of equal ability.

Speaking of my own field — physics — there are splendid opportunities for the physicist in other branches of science, such as biology, for example. Here he is needed for the study of the effect of the various forms of radiation on plant and animal tissue. He is needed not only on new work but also to check up on some of the old. In this last category we have heard for years about mito-genetic radiation. Is there really such a thing? I asked this question in many of the European laboratories which I visited last fall, and I still do not know. In the Radiation Laboratory of the University of Berlin, Dr. Friedrich had had four men looking in vain for it and had finally changed the name to mythogenetic radiation. But Joffe, in Russia, and some other good men, felt that they had observed and measured it.

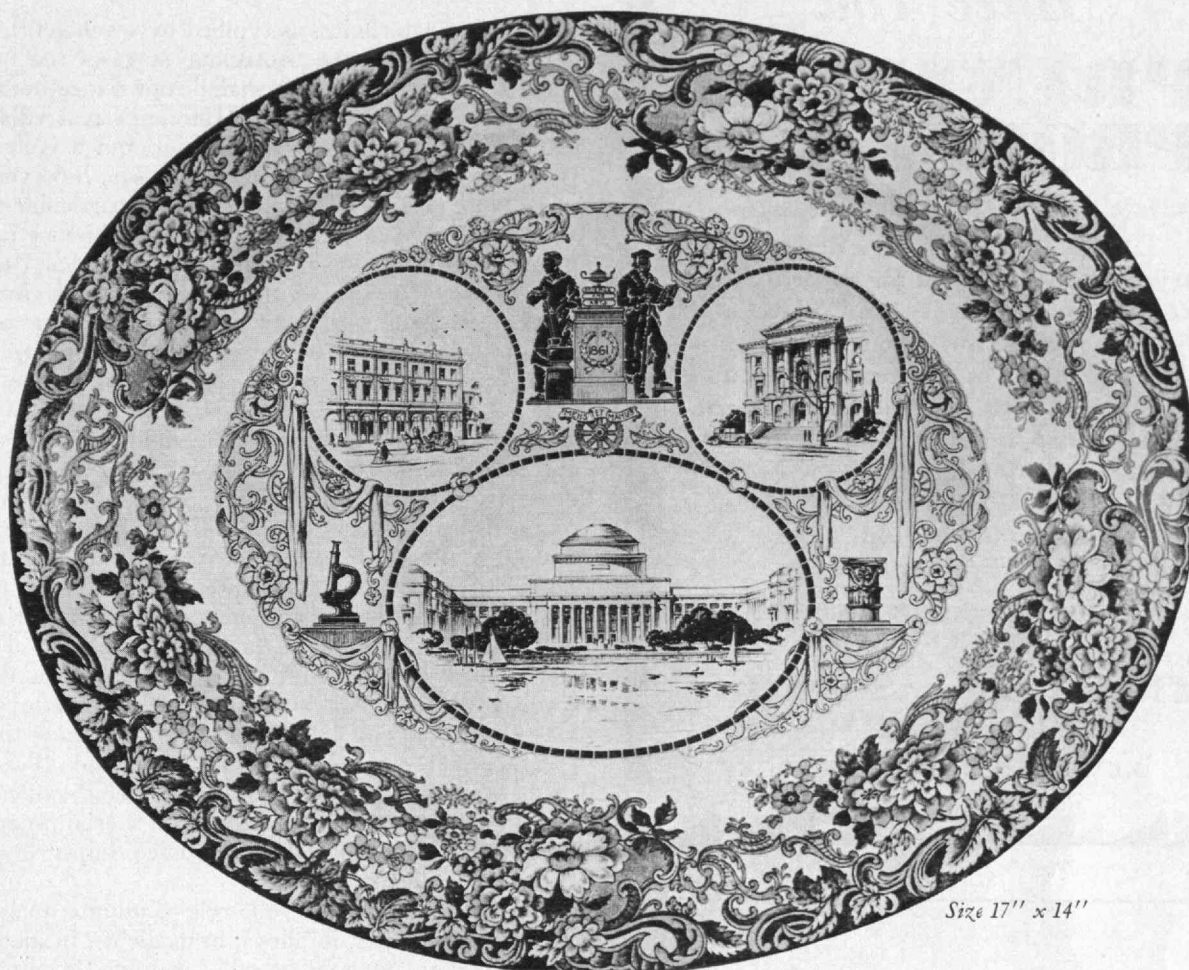
And we still know so little about the mechanism of the physiological effect of x-rays. Then there is the fascinating field of the production of mutations in plants and animals by radiation. What is the mechanism there?

The field of physics is a very broad one. We have recently laid much stress on electronics, but we must not neglect the older branches. Take the field of mechanical vibrations, especially of the undesirable vibrations produced by our various mechanisms. We are rapidly and properly becoming noise conscious, and there is a big field for work in noise reduction.

To sum up: There is a large and rapidly growing field for the physicist in university, industrial, commercial, government, and private laboratories. The industrial laboratory requires not only men interested solely in pure science but also those interested in the application of the results of fundamental research and those interested in the systematic study of engineering and manufacturing difficulties. There is also an important field of work in bringing the new physics to bear upon some of the other branches of science.

I can think of no pleasanter or more worth while vocation than that of the physicist.

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TECHNICS AS A SOCIAL FORCE

(Continued from page 351)

and light of eotechnics, as typified by seventeenth century Holland, and the neotechnic stage of the future when the lion and the lamb shall lie down together in an economy of abundance. Mr. Mumford's real villain is acquisitive and exploitive capitalism, and it is against this that he rails. He beclouds the issue, however, by identifying this social complex with a particular technical stage, and erecting an accident of history into a principle. It is, moreover, ridiculous to say that Darwin and Wallace "projected the intense struggle for the market upon the world of life in general." This would seem to take a late misreading of Darwin and impose it upon events that worked themselves out rather fully before 1859.

The neotechnic phase, now beginning to take shape amid the malformations of the coal and iron economy, dates from the development of electrical devices and more efficient prime movers. Industrial decentralization and the "displacement of the proletariat" are made possible. "Just as one associates the wind and water power of the eotechnic economy with the use of wood and glass, and the coal of the paleotechnic period with iron, so does electricity bring into wide industrial use its own specific materials: in particular, the new alloys, the rare earths and the lighter metals. At the same time it creates a new series of synthetic compounds that supplement paper, glass and wood; celluloid, vulcanite, bakelite and the synthetic resins with special properties of unbreakability, electrical resistance, imperviousness to acids, or elasticity."

In eotechnics, likewise, the rôle of minute quantities becomes important, in alloys; in medicine, in dietetics, in psychiatry. "One might say, for dramatic emphasis, that paleotechnics regarded only the figures to the left of the decimal, whereas neotechnics is preoccupied with those to the right." The dissolving influence of the new physics upon scientific thought is duly noted, and above all, the increasing importance of the biological sciences is stressed.

In his neotechnic enthusiasm, Mr. Mumford is perhaps overgullible in accepting the latest facile embodiments of streamlining, dymaxian cars, and Norman Bel Geddes silhouettes for any and (Concluded on page 372)

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CENTRIFUGAL PUMPS, TURBINES, AND PROPELLERS. By WILHELM SPANNHAKE. Translated from the German by JOHN B. DRISKO, with an introduction by JEROME C. HUNSAKER. 1934. 6½x9½. Pp. xiv+328. 182 illustrations. \$5.00.

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THE THEORY OF FUNCTIONS AS APPLIED TO ENGINEERING PROBLEMS. By R. ROTHE, F. OLLENDORFF, and K. POHLHANSEN. Translated from the German by ALFRED HERZENBERG. 1933. 6½x9½. Pp. x+189. 108 illustrations. \$3.50.

"The Massachusetts Institute of Technology is to be congratulated upon making available an English translation of a book which should prove of great value to all those who are concerned with the aerodynamics of aircraft. The book is not only exceedingly well translated, but it contains an indispensable bibliography in the text. It is a book which can be confidently recommended." — *Journal of The Royal Aeronautical Society* (London).

"The first half of the volume deals with the theory from the point of view of pure mathematics and gives a general knowledge of the methods of function theory. The second part consists of five lectures upon specific applications, chiefly to problems of electrical engineering; the construction of electric and magnetic fields by means of source-line potentials; two-dimensional fields of flow; the field distribution in the neighborhood of edges; the complex treatment of electric and thermal transient phenomena; and the spreading of electric waves along the earth." — *Electrical Engineering*.

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TECHNICS AS A SOCIAL FORCE

(Concluded from page 370)

all moving objects. Likewise the selenium cell, if we are correctly informed, is now obsolete for photo-electric uses. Mr. Mumford evidently is unfamiliar with the work of Oliver Heaviside and of the genesis of the loading coil for long distance telephony. He overlooks the importance of mathematics in technics, and despite a cocksure manner he exhibits considerable ignorance of scientific and engineering details. These, however, are minor points.

In his vision of what technics has done and may do for mankind, the author shows distinction as artist, critic and psychologist. Of political forces he takes little note; economic forces he misunderstands. The cruder overproduction and over-investment theories of trade cycles are uncritically advanced. The notion of an economy of abundance just around the corner keeps cropping up. The "price system" is viewed with disapproval. The argument follows Veblen and J. A. Hobson, with a dash of Stuart Chase and the Technocrats. To turn Mr. Mumford's own words against him, "the historic mistakes of men are never so dangerous or so plausible as when they are embodied in a formal doctrine, capable of being expressed in a few catchwords." His definitive proposal for the new social order is "basic communism," embodying a minimum of subsistence defined, enforced and provided, with scope above this minimum for free private enterprise. "As it is, some 15 million industrial workers supply the needs of 120 million inhabitants of the United States. Limiting rationed production and communized consumption to basic requirements, the amount of compulsory labor would be even less." No account is taken of other categories of labor; transportation and distribution to say nothing of agriculture, seem to be overlooked.

Certainly no critic could quarrel with the author's desire for properly distributed leisure, for consumption as a way of life involving a maximum of creative activity and a minimum using up of commodities, and for more attention to improved conditions of work, even at the expense of smaller output. The book, in its latter part, by reason of its easy disregard of ways and means and plodding, necessary steps forward, seems to lose its earlier character of an imaginative but withal well-documented study, and becomes vaguely hortatory. It reflects a generous idealism rather than informed competence.

Knowing what transport has done to relieve local famine in Russia and India, it seems strange to read that "with the development of balanced economic regions, agricultural production will be related to a stable local market [and] the sudden gluts and shortages that arise with transportation to distant centers will disappear." There is some confusion on the whole subject of economic regionalism. At one stage it is declared that the spread of technics will promote regionalism and reduce regional specialization. At another point it is stated that "the basis of the material elements in the new industry is neither national nor continental, but planetary."

It is, however, beside the point to pick flaws in the economics of a book in reality written on a different plane. Mr. Mumford has, despite all these flaws, pro-

duced a stimulating and provocative work, which represents a feat of creative imagination and social criticism. As Stevenson said, "we are not cotton spinners all," and a work may have genuine validity on other realms than the economic. And with the mellowing effect of the years, Mr. Mumford's strictures on the waste and absurdities of industrial capitalism may give place to a riper philosophy like that of Santayana when he remarked, "The acceptable side of industrialism, which is supposed to be inspired exclusively by utility, is not utility at all, but pure achievement. If we wish to do such an age justice we must judge it as we should a child, and praise its feats without inquiring after its purposes."

UNWRITTEN NEWS FROM THE LABORATORY

(Continued from page 349)

It is almost as incredible as the saying in Georgia about how to tell the difference between a Georgia cracker and a stump. You drive to the country until you come to a big cornfield. You look down between the rows until way off in the distance you see an object on the ground between two rows. You lean on the fence and watch this object steadily. If the object moves, it is a stump.

Opportunity is like that; it requires faith to be seen at all. There is a fundamentalist idea that science has no place for faith. The scientist does use faith in every step into the unknown; faith that his course is well-chosen.

Yet his faith is not of the sort to prevent him from recognizing a new fact when he meets one. Professor Diederichs recently had that experience. He was investigating the way steam turns into water on the pipes inside a condenser. As you cannot see inside a condenser, he ran some fine wires inside to read the temperatures. Now engineers have believed for years, and the textbooks have stated, that water gathers upon these pipes in a continuous film, but Professor Diederichs' wires were misbehaving. They showed temperatures jumping up and down in an unaccountable fashion. So he placed a pyrex window in the condenser cover and looked inside. There was the answer as plain as a thunderstorm. The water was not condensing as a film, as the books say it should; it was condensing in drops. This discovery, coming merely from looking through a window, promises to revolutionize steam condensers.

Professor Diederichs did this work at Cornell, but I might have told you about the same fundamental discovery being made at M.I.T. So similar were the findings that reports of the two studies were given to the engineering world at two different scientific meetings during the same week last December. One came from Cornell, the other from Technology. This is another principle of the scientific method: that opportunities do not come singly. They are available simultaneously in many places for the men with faith. It is never safe to stop searching in the same old place. On the spot

where there is no opportunity today, a new one may arise tomorrow due to new materials, to social changes, new codes, or new deals.

IT IS not sufficient simply to discover opportunities. They must be vitalized, made interesting to others. In news language, we have a word for this, *ballyhoo*, but this word is not scientific. Let us see, therefore, what the scientific method has to offer about proper methods to interest the world. Astronomers have discovered the "red shift," evidence that the outer nebulae are all speeding away from earth, as if the universe were a bursting bubble. The latest is that the most distant nebulae may be flying away at the speed of light.

For years I have been asking the astronomers why they consider the red shift as evidence of an expanding universe, rather than taking the simpler explanation that light, like everything else, gets tired, slows down, and so begins to turn red after traveling vast distances.

Their answer has been that it is more profitable to investigate under the theory of receding speeds. A shining example of this principle is the great scientific personality, Einstein. When he came to consider space, he could, if he chose, think of space as something going on and on endlessly, forever. The brain cannot conceive clearly of something endless. The mind gets tired and fuzzy in that attempt. So Einstein considered just the space which minds can clearly grasp — the space that is filled with light and other forms of radiation.

To this kind of space he gave a name. Had he been a man of small caliber, he might have sought to coin a new name, but he is a genius. So he just took over the old name, and said that this definite, more understandable area is the real space. He even said it might be curved, for its radiation is that way. He left it for future generations to discover a word to fit the meaning of the other, fuzzy, on-and-on forever thing.

The result was to stir the world's interest beyond all expectation. Einstein's achievements are vastly greater than any redefinition of space, yet this small incident was the magic touch which caught popular fancy. And it was one of the factors which set in motion a great tide of scientific progress.

Only in science, I think, is time spoken of with the respect it deserves. Among industrial scientists there is a saying that it is five years from the test tube to the dividend. Five years is near the minimum. Lifetimes are not uncommon in science. Apply the time formula in its scientific sense, and you will develop all the patience, foresight, statesmanship, and long-time planning for which we, as a nation, have prayed — and often prayed in vain.

Another principle of the scientific method has various names. The name I choose today is youth. By youth I do not mean years. I mean vivid interest in life and unceasing curiosity which is supposed to go with youth. In that meaning a man may be equally young at 20, or at 40, or at 70. The tragedy is that he may not be young even at 20, and worse still, may never know of his handicap. This quality which I call youth is more often termed scientific curiosity, and rated in first place as a source of progress.

(Continued on page 374)



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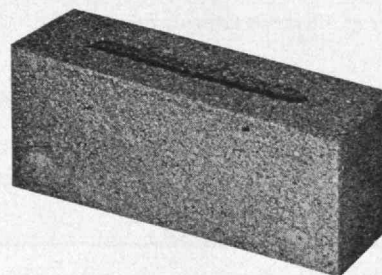


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UNWRITTEN NEWS

(Continued from page 373)

Behind the veil of long words which has screened science from public knowledge lies an almost incredible development in scientific publication, the volume of which in some respects resembles the volume of news from fast presses. In his presidential address to the Society of American Bacteriologists at Philadelphia last December, W. Mansfield Clark, of Johns Hopkins, noted that a biologist wishing to keep informed on current progress in branches of science directly interesting him would have to grope through 67,000 yearly entries in scientific publications. That amounts to 183 scientific articles every day, including Sundays. Imagine the consternation among baseball fans if they had to follow 183 box scores daily!

The scientific articles are not printed because scientists seek publicity. They are not prompted by selfishness. In order that new scientific facts may be available to everyone, the discoveries are given without price. The result is a speeding up of the progress of the world.

In freedom of the press, newspapers aim at the same goal. The full significance of this freedom, I think, is realized only by newspapermen and scientists. You, as scientists, may never use the newspaper to tell your story, although it is becoming one of the best media for scientific news, but the fact that the press is free insures that sinister influences will not be able to deprive you of your opportunity for publication in your own field.

Finally, the scientific method considers the public welfare and it does so to a degree which no other formula equals. It may seem like a far cry from some of the undertakings of science to any conceivable public benefit. It is difficult to imagine the useful connection between better babies and mitosis in the eggs of *Paracentrotus*. It is still difficult even when scientists call *Paracentrotus* by its everyday name of sea urchin.

The scientific method, almost uniquely among the creations of man, recognizes the truth that the public welfare includes the patient investigation of many discoveries which at first have no possible apparent application to immediate needs. Science carries on these pioneering investigations side by side with all its other labor of quick production of wealth and immediate saving of life. Moreover, the present seems a fitting time to apply this scientific principle, for I think one of the most significant aspects of present changes in the world is the shortening of the lag there used to be between great accomplishment and public welfare. Today more leaders are insisting that consideration of public welfare go hand in hand with creative effort. In this kind of planning science has a foremost place.

That place it is already taking. Its range is universal. It extends from the President's new Science Advisory Board, which is working without publicity, down through the scientific staffs of our greatest corporations to small pioneering enterprises. It permeates the nation as a sort of blind faith that science should be capable of a Messianic rôle, in which you men and women will participate in a momentous decision. That decision will be whether science shall assume a greater share in the world's social, economic, and spiritual leadership.

Science is now creating another new material world. With this new world there arise human problems which require the highest leadership. Meanwhile, too many of the foremost intellects of science have been tending more and more toward monasticism. Their aims have been to become endowed and to be detached from the actual world. Like the monks in the monasteries who reflected upon religion, they have desired to reflect upon science. It is true that the monasteries controlled the minds of men in a spiritual sense, and that the monastic scientist may control the world in a material sense, but material control is not sufficient.

Science cannot afford to be parochial. In the broadest sense, scientists are public servants. They should not be occupied with the natural sciences exclusively, but they should make their main sphere the general science of existence.

THE TREND OF AFFAIRS

(Continued from page 356)

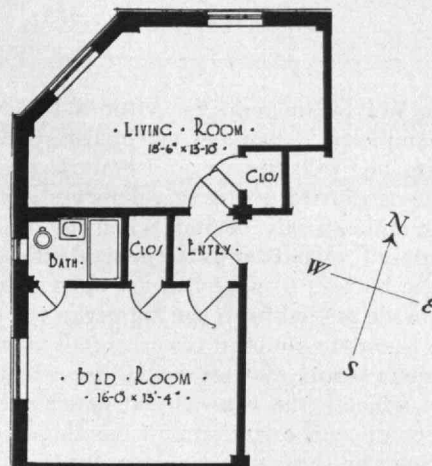
signals the salesperson to use the telephone which is mounted on the transmitter. Upon lifting the telephone from its cradle, the salesperson finds connection already established with the credit clerk, and receives verbal instructions as to the disposition to be made of the sale.

After the sales audit has been drawn from the sales cards, the charge cards are sorted out, again automatically, and after further sorting by account number are filed behind master cards which bear the names and addresses of the customers, in punched-hole code. When the time for billing arrives, the file of charge cards is run through billing tabulators, which first head up the bills and then list and total the various items of charge, credit, and old balance. The actual names and not merely the code numbers of the items are printed on the bills, just as is the present practice.

A marking-room machine, which punches and prints simultaneously the inventory card and the merchandise tag, contains a keyboard controlling all the set-ups. The amount of set-up required is far less than in ordinary punching, because the receipt of a shipment of goods will occasion the preparation of a large number of cards bearing much common information, which may be left uncleared in the machine for repeat punching. For example, the date of receipt, the manufacturer and the department will be common to all; and the cost and selling price, style, color, size, and classification will be common to certain groups. Thus the usually laborious work of punching is put on a quantity production basis, and can proceed rapidly and accurately.

In the transmitter shown at the bottom of page 356, the salesperson's token is being inserted, the price tag on the left and the cashier's token in the center being already in place. A signal light is shown at the front and is used to signal the operator to the telephone which is mounted on top. If any of the tokens is not correctly oriented in its pocket, the transmitter will fail to latch down when closed, and all (Concluded on page 376)

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THE TREND OF AFFAIRS

(Concluded from page 375)

circuits will be inoperative. After a transmission has been completed, a hammer mechanism under the merchandise tag will operate and emboss the day's date into the cardboard of the tag. This embossing receipts the tag, and can only be done when the record has been completely transmitted to the central office.

At the bottom of page 356 are shown the recorders. Blank cards are fed from the hopper in the lower center and on them are punched records of all sales. The upper mechanism prints and totals the necessary sales information, which is the same as that punched on the cards.

The credit authorization unit has three keys in front, which may be thrown up or down for the approval and

rejection of the charges, telephone call-back, emergency call-back, and for local control of the carriage and space-up.

A total of 250 transmitters will serve the entire department store, and will feed their information into a battery of 20 recorders. Approximately four seconds is the time required for the recording of each sale. A group of 15 credit authorization units will handle that aspect of the work and it is planned to authorize every charge sale instead of only those over five dollars, such as is customarily done in most stores at the present time.

The central records installation at Kaufmann's is the only one under way at the present time, but the installation has been inspected and its progress is being followed closely by representatives of every large store in the country. If in actual operation throughout the entire store the system turns out to be as successful as it has been on a smaller scale, it is expected that many of the other large stores will follow Kaufmann's in adopting this modern equipment.

THE INSTITUTE GAZETTE

(Continued from page 364)

Williams, '08, Ralph T. Walker, '11. *Chemistry* — George T. Cottle, '98, Salmon W. Wilder, '91. *Electrical Engineering* — Thomas Spooner, '09, Don L. Galusha, '04. *Biology and Public Health* — Harrison P. Eddy, Jr., '17, Lewis W. Waters, '10. *Physics* — Charles G. Abbot, '94, Bailey Townshend '16. *Chemical Engineering* — Samuel Cabot, '09, George H. Taber, Jr., '13. *Geology* — Frederick G. Clapp, '01, Robert Livermore, '03. *Naval Architecture and Marine Engineering and Ship Operation*: William S. Newell, '99, Clayton M. Simmers, '05. *Business and Engineering Administration*: Harold V. Coes, '06, George W. Treat, '98. *Aeronautical Engineering* — Ralph D. Weyerbacher, '14, Donald W. Douglas, '14. *Mathematics* — George A. Campbell, '91, Ralph D. Booth, '20. *Economics and Social Sciences* — Rudolph F. Haffenreffer, '95, Hon. Lewis W. Douglas, '17. *Hygiene* — Marshall B. Dalton, '15, Donald F. Carpenter, '22. *English and History* — Edward P. Brooks, '17, J. Rhyne Killian, Jr., '26. *Military Science and Tactics* — Clifton C. Carter, '09, Paul W. George, '22. *Division of Industrial Coöperation* — George P. Dike, '99, Charles R. Boggs, '05. *Textiles* — Albert R. Pierce, '91, Russell B. Lowe, '02. *Modern Languages* — Ingersoll Bowditch, '00, Donald W. Kitchin, '19.

Also elected by the annual alumni ballot were Representatives-at-Large on the Alumni Council: William S. Forbes, '93, John G. Barry, '07, Sumner M. Spaulding, '16, and William W. Vicinus, '23.

5:15 Club

UNLIKE pre-War days, comparatively few undergraduates now live in rooming houses, while student "boarding houses" of the type prevalent on Columbus Avenue in the 1890's or on St. Botolph or Newbury Streets in the early 1900's simply do not exist any more. Yet, despite dormitory accommodations for over 600, and fraternities housing about an equal number, well upwards of a third of the student body still commute from home to class room.

Thus it seems altogether probable that for years to come three out of every five students will be that type of stalwart who on six mornings a week leaves a paternal fireside between break of dawn and around eight A.M. with lunch tucked under arm and dashes for train or street car, or gets a gas wagon underway, ordinarily making sure his prearranged quota of paying guests are on hand. He may be expected to make a nine o'clock punctually; scrupulously attend his other morning classes; hastily eat the lunch (if schedule permits); keep all afternoon class appointments; and then negotiate the morn- (Concluded on page 378)

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THE INSTITUTE GAZETTE

(Concluded from page 376)

ing's trek in the opposite direction to devour a late supper, and settle down to an evening of serious study.

Traditionally that is his day; traditionally he respects, even loves, the Institute; traditionally, he carries his books and lunch in a brown leather bag whence comes his *traditional* name, for, to other students, to Faculty, and even to himself privately, he is a "brown bagger." His routine has produced many a successful alumnus, for those who survive its rigors indeed absorb in full measure that which Technology has to offer in classroom and laboratory.

The average commuter, however, no matter how much he might yearn to get into student activities and social affairs, to develop a *savoir faire* through dances, smokers, and meetings, too often finds it inconvenient or, as he thinks, impossible, to do so, regardless of financial considerations. Then, too, he "is under the constant guidance and often restraint of his parents whose sole interest in the majority of cases is a fine set of records without regard for the educational value of outside activities and association with his classmates."

This quotation is from the Report of the Alumni Committee on the Undergraduate Commuters Association rendered at the May meeting of the Alumni Council. This committee, under the able chairmanship of Professor L. F. Hamilton, '14, has been sponsoring, pulmotoring, and guiding an attempt begun during 1932-33 by E. S. Goodridge, '33, and others to "do something" for (and about) the commuting student. From feeble beginnings there has evolved "The 5:15 Club of M.I.T.," which during 1933-34 has held: a mass meeting in October addressed by Dr. Compton, attendance 250; a smoker in November addressed by Dr. Bush, attendance 75; a dance in November, attendance 155 couples; another dance — this one a New Year's party — attendance limited to 80 couples and sold out ten days ahead; still another dance — this one in March in coöperation with the dormitories — attendance, 150 couples; also in March a first showing of the Technology film, attendance 90; a May-time moonlight sail down the harbor, attendance unrecorded, but a full ship.

Also during the year Professor Hamilton's committee (composed of Professor C. R. Hayward and H. M. Haley of the Class of 1904, and Messrs. J. J. Rowlands and W. M. Ross) has been instrumental in effecting the conversion of the Walker Memorial billiard hall into a comfortably furnished lounge as headquarters for the "5:15 Club," with provisions for members to lunch, read, study, and otherwise foregather.

In receiving the report of somewhat unexpected accomplishment, the Alumni Council was obviously both surprised and pleased, but apparently more than a little stunned, to realize that after so many years it appears probable that "brown baggers" may come to assume the part in student life which their numbers would entitle them to occupy. Although not mentioned openly, their voting potential, when organized, is such as to make them a not inconsiderable factor in the student government system.

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MASSACHUSETTS INSTITUTE of TECHNOLOGY
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TECHNOLOGY MEN IN ACTION

CHECK-LIST OF THE ACTIVITIES AND ACHIEVEMENTS OF M.I.T. ALUMNI, OFFICERS, AND STUDENTS

Congratulations

☛ To FREDERICK G. KEYES, Head of M.I.T.'s Department of Chemistry, on receiving an honorary degree of doctor of science from Yale (June 20) for distinguished achievement in physical chemistry and steam research.

☛ To FRANK LOVEJOY '94, on becoming President of Eastman Kodak Co.

☛ To FRANK W. CALDWELL '12, on being awarded the annual Collier trophy of the National Aeronautic Association for "the greatest achievement in aviation" this year, by President Roosevelt. Mr. Caldwell invented the controllable pitch propeller. "The success of his propeller has revealed a new horizon of aeronautics and taken the limits off speed. Henceforth, our pace through the air will be as fast as the daring and imagination of the engineers."

☛ To MARSHALL B. DALTON '15, on being elected President of Boston Manufacturers Mutual Fire Insurance Co.

☛ To ALBERT HEGENBERGER '17, on being awarded the Distinguished Flying Cross in a military ceremony at the Army War College. The citation reads: "For extraordinary achievement while participating in aerial flights. By his initiative, energy, and courage, Captain Hegenberger rendered exceptionally valuable services to the Government of the United States in the execution of a series of aerial flights culminating with a solo instrument flight and landing in May, 1932, in connection with the testing and development of the Air Corps system of Instrument Flying and Landing."

Academy Members

☛ At the April meeting of the National Academy of Sciences, the following Institute professors were elected to membership: VANNEVAR BUSH '16, Vice-President and Dean of Engineering; JAMES F. NORRIS, Director of Research Laboratory of Organic Chemistry; and NORBERT WIENER, Professor of Mathematics. Other Technology men in the Academy are: CHARLES G. ABBOT '94, HENRY B. BIGELOW '00, KARL T. COMPTON, WILLIAM D. COOLIDGE '96, GEORGE E. HALE '90, WILLIAM HOVGGAARD, Staff,

CHARLES A. KRAUS '08, ARTHUR B. LAMB '02, SAMUEL C. LIND '02, WALDEMAR LINDGREN, Staff, ARTHUR A. NOYES '86, ALBERT SAUVEUR '89, JOHN C. SLATER, Staff, ELIHU THOMSON, Corporation, RICHARD C. TOLMAN '03, and WILLIARD R. WHITNEY '90.

☛ At the May meeting of the American Academy of Arts and Sciences, JAMES F. NORRIS, Staff, TENNEY L. DAVIS '13, and INGERSOLL BOWDITCH '00 were elected Vice-President for Class I, Corresponding Secretary, and Treasurer, respectively. The following Technology men were elected Fellows: EDWARD L. MORELAND '07, PHILIP M. MORSE, Staff, C. G. A. ROSSBY, Staff, JEROME C. HUNSAKER '12, ERWIN H. SCHELL '12, LEIGHTON B. SMITH '19, OTTO G. C. DAHL '21, WALTER H. NEWHOUSE '23.

DEATHS

☛ CECIL H. PEABODY '77, Professor Emeritus of Naval Architecture, on May 4. On the Faculty for 37 years, Professor Peabody had been Head of the Department of Naval Architecture and Marine Engineering from its beginning in 1893 until his retirement in 1920. He had written several volumes on thermodynamics, on which he was an authority. He was professor of mathematics at Imperial Agricultural, Sapporo, Japan, after graduation and in 1881 became assistant professor of engineering at the University of Illinois.

☛ WILLIAM B. FISHER '78, on April 22.

☛ HENRY S. JOSSELYN '78, on March 1.

☛ CASS GILBERT '80, on May 17. The London *Times* paid the following tribute to Mr. Gilbert: "The list of his most important buildings only would be long enough to prove him the most remarkable architect of his generation in America. His range and versatility were extraordinary. . . ."

And the New York *Times* wrote of Mr. Gilbert: "New York City has lost the prophet of her architectural distinction among the cities of the earth. The topless towers of Ilium which furnished a setting for the Homeric epic were but as Bedouin huts by comparison with the structures which his genius lifted high above Manhattan Island. Coming up the bay, one still sees outstanding the queenly tower that gave him his first fame. . . ."

"There are many other buildings of his that we see looking about us on the levels of Sir Christopher Wren's buildings. And not alone here, but in many cities of the United States, especially in the valley of his birth — from the State Capitol in Minnesota to that of Arkansas and to the University of Texas. A man of the Middle Border, he bequeathed lasting gifts of his art to the prairies beyond the mountains. Nature's wild landscape was transfigured by the sovereignty of his mind, and, as the Laureate has written, what he wrought comforted mortality with immortal grace. His closing years were crowned with the highest honor that his country could give him in his selection as the architect of the United States Supreme Court building. He once said in explanation of the long time it would be in the building that it was designed to last for all time. His fame will live with it.

"Mr. Gilbert had every honor that his profession and kindred arts could give. If he had lived in Athens in the age of Pericles, he would no doubt have been chosen with Ictinus and Callicrates to fashion the 'greatest gem on earth's zone. . . ."

☛ ALICE A. STEVENS '82, on March 8.

☛ DAVID WESSON '83, on May 22.

Mr. Wesson was the developer of the well-known Wesson cooking oil and had been technical director of the Southern Cotton Oil Company since 1918. During the bicycle boom, Mr. Wesson manufactured bicycles, returning to the oil business in 1899. For many years Mr. Wesson had been Secretary of his class.

☛ A. W. WHITNEY '84, on December 1.

☛ EDWARD COLLINS '88, on May 1.

☛ F. W. MCCARTER '96, on May 31.

☛ L. P. DICKINSON '96, on June 3.

☛ JAMES C. ROYCE '97, on March 16.

☛ NORMAN WATKINS '98, on April 9.

☛ HERBERT H. ADAMS '99, on February 27.

☛ HENRY G. MORRIS '99, on May 28.

☛ W. H. SIMPSON '02, on April 16.

☛ RALPH ADAMS '04, on May 30.

☛ ARTHUR C. WINCH '08, on April 7.

☛ J. R. THORNDIKE '08, on May 29.

☛ H. W. BARKER '14, on February 14.

☛ R. F. POLLARD '15, on April 4.

☛ MAURICE P. BOND '24, on December 2, 1933.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

THE extent to which Technology alumni maintain and cultivate an affectionate responsibility for the best interest of M.I.T. is admirably indicated in the many reports below from Technology groups in all parts of the world. Our clubs are rendering invaluable service to the Institute and they are demonstrating the validity and force of the Technology spirit. In their vigorous activity they are proving that an intelligent, sympathetic loyalty to a great institution is one of the finest and most pleasant of avocations.

Technology Club of Chicago

Notice to alumni visiting *A Century of Progress*: If you want to locate any alumni friends in the Chicago region, please write or telephone either the Secretary or the President, Ross D. Sampson '13, Lumen Bearing Company, 201 North Wells Street, Chicago (Telephone: Randolph 8884). Also, weekly luncheons of the club are held on Wednesdays, 12:30 p.m., at the Medical and Dental Arts Dining Room, 185 North Wabash Avenue. A directory of alumni in the Chicago district will also be found in the M.I.T. exhibit space in the Hall of Science.

The Chicago Club heartily appreciates the attitude of the Institute in their decision to exhibit at *A Century of Progress*. Visitors will find the exhibit in the Hall of Science, under charge of Bill Power '34. Ross D. Sampson and Louis H. Skidmore '23 were especially vital in the work of obtaining space and making arrangements for the exhibit.

Dean William Emerson brought us most interesting and welcome news of the Institute when he attended the dinner held in his honor early in March. This event was primarily a gathering of the architects who wished to be again with the head of their course, and no elaboration is needed to tell of the warmth of interest and good fellowship which was stimulated by this meeting.

On May 16, the club held a dinner with an attendance of 89. The new Technology movie was shown. Prospective students for M.I.T. were invited, a list having been obtained from Professor James L. Tryon, Director of Admissions. Also, several other prospective students attended. These were invited with their fathers. This action on the part of the club met with a very warm response. Major Chester L. Fordney, U. S. Marine Corps Representative at *A Century of Progress*, was the speaker for the evening, describing his flight to the stratosphere with Commander Settle last fall.

Joel I. Connolly '16 very kindly lent us the use of his projector and operated the film. We also thank Herbert W. Kochs '24 for his work in making arrangements for the dinner. The movie "Technology" was also shown at many high schools

in the Chicago district, and alumni who personally took the film to the high schools were: Philip W. Moore '01, Guy P. Palmer '04, and Ross D. Sampson '13. — EDMUND G. FARRAND '21, Secretary, United Conveyor Corporation, 37 West Van Buren Street, Chicago, Ill.

Montana Society of the M.I.T.

Local alumni were much agog the night of May 3 in anticipation of viewing the Technology "movies" and a few of us met for a dinner of food and reminiscences at 6:15 at the New Finlen Hotel, Butte. There are not many of the boys left here, so we usually invite the fathers of grads or present students, who are always interested in our doings and who have suggestions of great value to throw into the general jack pot.

The chef served T-bone steaks, making the bones very large, the T being for Technology and the quantity of extra bone adding to the profits of the hotel proprietor. There were nine at the table, all on top, as nothing was served to make us go under, although we had our doubts later and thought perhaps our coffee had been "sticked" with spikes of a size usually driven to hold down 160-pound rails.

W. A. Kemper '04, Honorary Secretary of our organization for Butte, under whose direction the pictures were to be shown, then gave a brief résumé of what we were to see, after which he assessed us, dads and grads alike, four bits apiece to pay the movie expenses. The wide, open spaces may have their advantages, but when we pay the expressage on reels 400 miles to Salt Lake City, we prefer to live in the regions of dense population.

The dinner broke up at 7:30 so the attendants could gather their wives to view the pictures that were shown at the Montana School of Mines, through the courtesy of Dr. Francis A. Thomson, President of that institution, and one of his staff, Dr. Curtis L. Wilson. Homer Bradford, of the Butte High School, used his projection machine and did the reverse "shooting." Admission was by ticket only for students of the high schools and the School of Mines. Before the lights went out, Kemper gave the finest sales talk for M.I.T. we ever heard. You know, Kemper is in the real estate business in Butte and forgot himself and thought he was in the same business in Los Angeles. That is the low-down on his wonderful sales talk.

What wonderful memories and longings the pictures brought back. When the boys went over the hurdles on the athletic field, some of us were remembering the time when the only hurdles we had were in the class rooms and how often we knocked such hurdles down before getting over them.

When the electrical gauging oscillographs came on the screen, showing lines that bore likenesses of reptiles that even St. Patrick could not banish, right there we started wondering whether some fiend, or perhaps friend, in human form had not spiked our coffee. Anyhow it was a good show, worth the four bits, and even the movie sophisticates failed to make the usual remark that Arliss or Garbo could have acted it better. Charley Locke, with his concentration pan, and Dr. Lindgren, with his ever-smiling "pan," were greeted with great applause, as both are well known in Butte.

Those in attendance at the dinner were: W. A. Kemper '04, of the Butte Land and Investment Company; Frederick C. Gilbert '98, consulting engineer; Frederick C. Jaccard '07, and Walter R. C. Russett '18, of the staff of the Anaconda Copper Mining Company; W. L. Creden '90, of the State Highway Department; George W. Craven '98, of the Montana Power Company, and the undersigned, who is President of the Montana Stock and Bond Company and at times during the depression wished he had not been. "Dad" guests were: James E. Davidson, of the Montana Power Company, pater to Jesse Irvine Davidson '27, who now is in Cuba, and James G. Graham, of the Sullivan Machinery Company, whose son, Tom, is now a student at M.I.T. — CARL J. TRAUERMAN '07, Secretary, 25 East Broadway, Butte, Mont.

Rocky Mountain Technology Club

Bradley Dewey was the guest of the club at a meeting on April 24. He gave us an interesting account of the happenings around the Institute from first-hand information, and the talk was thoroughly enjoyed. The club issues an invitation to any other Tech men passing through Denver to get in touch with our President, B. V. Howe '26, or our Secretary, Fred Baker '19. We are rather isolated here in Colorado and appreciate such friendly and informative visits when the opportunity presents itself.

Ralph Adams '04 has been in El Centro, Calif., with R. L. Parshall building a laboratory for the study of silt removal from the heavily loaded waters of that area used for irrigation. This work is being done by the Bureau of Agricultural Engineering. Adams has been forced to come home due to ill health and is now in Fort Collins again. (Note: Since receiving this news, we have had word of Mr. Adams' death on May 30.) — B. V. Howe has been conducting some sanitary surveys under CWA funds and B. E. McKechnie '02 has been assisting him. — Maxwell Parshall '28 kindly sent in the above account. — FRED P. BAKER '19, Secretary, 1736 Krameria Street, Denver, Colo.

Detroit Technology Association

The Detroit Association wishes to report a most successful winter season. Our present officers are John H. Little '23, President; Edward A. Ash '22, Vice-President; John E. Longyear '26, Secretary; Harry M. Boardman '26, Treasurer; Philip C. Baker '16, Honorary Secretary. We have continued to finance The Technology Review for two Detroit high schools. The listing of our club in Detroit's telephone book continues to pay dividends. New comers and visitors are taking advantage of this facility to locate old friends and obtain meeting information.

Our regular monthly meetings have been well attended. During the season we changed our meeting place from the Harmonie Society to the University Club. A brief résumé of our meetings follows:

President Karl T. Compton has been here twice in the last year. We consider it a rare privilege. Last June he stopped with us on his way back to Cambridge after attending various professional and engineering meetings in Chicago. Members of the Detroit Engineering Society were our guests at this meeting. In October Dr. Compton was the principal speaker at a meeting of the Detroit Section of the Society of Automotive Engineers. We of the Detroit Technology Association were invited guests. Dr. Compton becomes more fascinating each time we are privileged to meet with him.

Judge Homer Ferguson '22, of the Wayne County Circuit Court, talked to us on "Mysteries of the Law." It was very revealing. — Mr. Ben Marsh, commercial superintendent of the Michigan Bell Telephone Company, told us of the romance of the telephone. It was educational and very interesting. — Mr. Witold Kosicki, a member of our Detroit Association, who recently returned from an extended tour of Poland, brought us "Poland As It Is Today" by means of movies and words.

We announced our April meeting as the most important meeting of many seasons. We felt that we were justified in doing this for we were exhibiting the movie "Technology" and entertaining high school principals and prospective M.I.T. students. The meeting resulted in a huge success. We had a total attendance of 108 for the dinner. Ten or 12 came in after dinner for the program, which made the total viewing the picture and hearing our speakers close to 120. Of this total about 45 were high school principals and high school students. High schools as far as Toledo were represented. Both public and private school representatives were there.

President John Little presided very creditably. He introduced the principals who in turn introduced the students from their schools. Our oldest living Michigan alumnus was introduced to the gathering. This man, George H. Kimball, Sr., Class of 1873, certainly is well preserved for his years. Whenever we have something

unusual we go to extra trouble to have Mr. Kimball present. He generally responds.

Our two speakers of the evening handled their subjects very nicely. Detroit's Honorary Secretary, P. C. Baker '16, covered the subject of scholarships very completely. A number of questions and answers after Baker's talk gave tangible proof of the interest in his subject. Tech man Charles F. F. Campbell's '01 speech was superb. His remarks made what would have been a good meeting an excellent and unusual meeting. His comments for the most part were directed to the youngsters. He talked as a father. His wording was very effective. M.I.T. is most fortunate in having a man like Charles Campbell to talk in conjunction with the Technology movie. After listening to his remarks, it is going to be hard to forget Tech and what it has to offer. His was that polishing touch.

Everyone present had a ditto copy of the best-known Tech songs. Tech man Robert Doremus '14 handled this angle of the meeting. He did a very nice job of leading the singing and playing the piano.

A few of the students present were already committed to Tech. Honorary Secretary Baker plans to follow through with all the youngsters present. He is thinking of perhaps getting them together for another meeting where the numbers will not be so large and the contact will be a little closer. This "Technology" movie meeting was most gratifying. — JOHN E. LONGYEAR '26, Secretary, 2000 Second Avenue, Detroit, Mich.

M.I.T. Club of Akron

On April 18 we were honored with a visit by Dr. Tryon, who spoke to us at a banquet held at the local University Club. We also had the pleasure of seeing the new Technology moving picture that Dr. Tryon brought with him.

Dr. Tryon had a very busy stop in Akron, for in the morning he spoke at Western Reserve Academy and in the afternoon he spoke at Akron University, in addition to spending the evening with our club. We had a turn-out of 40 of our local alumni at the banquet.

We consider ourselves fortunate in having had both Dr. Rowe and Dr. Tryon visit us within the last year. Those visits have done more to keep us informed and to interest us in M.I.T. current activities than most anything else could possibly do. We, therefore, wish to express our sincere appreciation to those men for their visits to our city.

Early in the year at a business meeting, we installed new officers. William E. Turner '18 is the new President and the undersigned is the new Secretary-Treasurer. At that meeting, Ray P. Dinsmore, '14, Honorary Secretary for this district, was appointed to head a committee to organize activities with the object of better acquainting the young men of this district with the M.I.T. and what it has to offer them. — EARL W. GLEN '29, Secretary, Box 178, Fairlawn, Ohio.

Worcester County Alumni Association of M.I.T.

Russell B. Lowe '22 was elected President of the club at its annual meeting and dinner held May 23 at the Worcester Country Club. Andrew B. Sherman '06, of Fitchburg, was elected Vice-President and John A. Swift '27, was elected Secretary and Treasurer. Howard R. Stewart '17, of Worcester, Charles E. Allen '07, of Spencer, Robert H. Brown '22, and Harry M. Latham '93, of Worcester, were elected members of the Executive Committee. Clarence M. Joyce '03 of Leominster, who has been President of the club for the past three years, presided at the meeting, which was attended by about 50.

Harrison P. Eddy, Jr. '17, of Boston, and Vice-President of the Alumni Association, spoke on the functions of the Alumni Council. Professor C. E. Locke, Secretary of the Association, brought greetings from President Compton and explained the Technology movie which was shown following the business meeting. — JOHN A. SWIFT '27, Secretary, 9 View Street, Shrewsbury, Mass.

Technology Club of Cincinnati

After a quiet season of about one year the local club has had a more active spring season. Our annual meeting and election was held at the same time as the visit of Professor William Emerson in March. The results of the election were as follows (with the assistance of the usual "Steam Roller" so much in evidence in the recent alphabetical organizations): President, John S. Rafferty '22; Vice-President, George W. Elkins '25; Treasurer, Oliver L. Bards '21; Secretary, Stuart R. Miller '07; Directors, Charles F. Cellarius '16 and Howard B. Luther '08.

This meeting was held on March 20, which turned out to be architects' day. Professor Emerson, after having been introduced to the beauties of our city under the guiding hand of Charlie Cellarius, met with us at our regular Tuesday lunch, the members of which were augmented by a group of the younger architects of the club. After a very pleasant time at lunch, Professor Emerson put a large group of these architects through a seminar in Fred Garber's office and also visited the growing architecture department of the University of Cincinnati.

At 6:30 about 40 of the local alumni gathered at Valerio's famous Italian restaurant to meet Professor Emerson and were most interested in the splendid way in which he told us of recent developments at Technology. Bill Schmiedeke '12, as retiring President, sang his Swan Song as a solo. This brought forth many and various kinds of responses.

Then for about a month things went on in the even tenor of their way, including the usual Tuesday get-together lunches. On April 20, Dr. James L. Tryon spent the day with us on his trip through the Eastern Midwest and South. Under the chauffeuring of the Secretary, Dr. Tryon endured a closely filled sched-

ule of visits to a number of our high schools and met a number of prospective freshmen.

That evening at 6:30, about 30 of the faithful gathered at the Hotel Metropole for dinner and to hear Dr. Tryon speak on the revision of admission requirements, which was a revelation to a number of the older men. At this dinner the Club had as its guests several high school principals and headmasters of private schools.

After his talk, Dr. Tryon, with the assistance of Jack Cochrane '23 and two projectors together with the advice of Wesley Carter '29, showed the new film "Technology." This showing was accompanied by a running fire of comments both by Dr. Tryon and the men present. The effect of the film was most interesting. Some of the schools want it as an educational feature aside from its Technology advertising feature. Without doubt we will want to have it again in the fall to show to interested students and their parents.

Through the kind offices of a famous Charles Locke '96, we were advised that Dr. Samuel C. Prescott '94 was to be in Cincinnati on private business so that a group of about 20 were able to have lunch with him on May 3, and as usual much enjoyed seeing him again and hearing about various old friends at the Institute in a delightfully informal meeting. We kept Prescott pretty busy inspecting plants and the Medical College, but hope that he has survived.

One of the current activities of the local Club is the selection of an entering freshman for the Richard Warren Proctor Scholarship and the presenting of other candidates for the competitive freshman scholarships offered by the Institute. We feel very proud of the record of our local boys at the Institute now with the large percentage who are and have been consistently on the Dean's list, and hope that our community may continue to send others of this same type. — STUART R. MILLER '07, *Secretary*, The Wm. S. Merrell Company, Cincinnati, Ohio.

The M.I.T. Club of Western Pennsylvania

The club met at the University Club, Pittsburgh, Pa., on Thursday, April 19, 1934, for a regular monthly dinner meeting. Our speaker was Mr. Alex Taub, development engineer of the General Motors Corporation, and his topic was "Engine Development and Design."

Mr. Taub has been connected with the automobile industry all his life and for the last 15 years has been with the General Motors Corporation in various positions. He is well known throughout the automobile industry for his papers on technical subjects and for his activities in the Society of Automobile Engineers. We expected to hear from Mr. Taub a great deal of technical information on automobiles and we certainly were not disappointed. But in addition, we discovered that our speaker was a skilled humorist as well, so that the evening was doubly enjoyable.

The place of our weekly luncheons has been changed because of the closing of McCreery's Dining Room where we have eaten for several years. We now meet every Friday at 10:30 at the Union Grill, Diamond Street near Grant Street, Pittsburgh. All M.I.T. alumni are cordially invited to join us.

We are pleased to announce the birth of a daughter, Louise Ethel, to Mr. and Mrs. S. J. Helfman, Jr., on April 1, 1934. Mr. Helfman '25 has been our Secretary for the past three years. — C. M. BOARDMAN '25, *Assistant Secretary*, Duquesne Light Company, Pittsburgh, Pa.

M.I.T. Association of Buffalo

The first meeting of the club in several months was held at the University Club on April 12 and was attended by two score loyal sons of M.I.T. After dinner, and the usual hilarity had subsided, we listened to a very instructive talk on telescopes, presented by Dr. Merrill, Curator of Astronomy of the Buffalo Museum of Science.

Marvine Gorham '92, Frank Lane '02, and Malcolm Brock '17 presented a resolution expressing the loss suffered by the M.I.T. Club of Buffalo in the death of Solon J. Stone '01, who was killed in an automobile accident near Rochester, N. Y., on November 5, 1933. Sol was ever loyal to the Institute and the alumni organization, and his untimely death, resulting from the negligence of others, at the height of a successful career, is mourned by all who knew him.

On April 14, Dr. Tryon visited Buffalo and presented the story of M.I.T. and the enjoyable and instructive new Technology movie to an interested group of prospective students and their parents and teachers. — C. D. GROVER '22, *President*, Whitehead Metal Products Company, 319 Niagara Street, Buffalo, N. Y.

Technology Club of Rochester

A dinner meeting of the club on March 20, held at the University Club, provided an enjoyable evening for 36 members under the genial direction of our President, William W. Vicinus '23. In addition to the regular members, the club entertained two guests, R. C. Kron, the father of two boys who have won scholarships from the club, and Dud Bell '17, who happened to be in Rochester at the time of our meeting.

After dinner, President Vicinus called upon Dud Bell for a few remarks, and our guest responded nobly with the tale of a memorable dance held under his leadership by the Technology Club of Philadelphia, back in the days when "hootch dancers" were something of an eye-opener.

The main purpose of the meeting was the showing of the new movie "Technology," recently produced at the Institute. It was well received by the membership and seemed to arouse considerable interest. During the time that the film was in Rochester it was shown in three of the local high schools to prospective students for M.I.T.

The club is now engaged in its annual campaign to raise \$500 for its Scholarship Fund. Each year, the club awards a scholarship, covering the tuition for the freshman year at the Institute, to some worthy boy from the Rochester area. The sum is raised by subscription from the members of the club, and at the present writing, over \$350 have been subscribed so that our prospects of reaching the goal are fairly bright. — HOWARD S. GARDNER, JR. '30, *Secretary*, Building No. 46, Kodak Park, Rochester, N. Y.

M.I.T. Club of Central New York

The last meeting of the club was held at the University Club, April 12, with 16 members and four guests present at the dinner. Our guest of honor and speaker of the evening was Professor Tryon, who gave us much interesting information on the Institute of today.

Professor Tryon carried out a twofold mission while in Syracuse: that of addressing our local alumni group, and contacting interested prospective students in the secondary schools. His visit was well received and given ample space by the local press. The arrangements for meetings at the local high schools and preparatory schools were made by our Honorary Secretary, Frederick W. Barker, Jr. '12. Professor Tryon was the guest of Dean Louis Mitchell '15 at the College of Applied Science of Syracuse University for one day.

After dinner the new Technology movie was shown, with our President, E. C. Booth, acting as projector operator. The movie created great interest and will undoubtedly do much to further the aims of the Institute, both among the alumni and prospective students. The present officers of the club were reelected for the coming year and considerable pressure was brought to bear to hold more frequent meetings. It is planned to have the next meeting in the form of an outing sometime in the early summer. — FRED S. HUNGERFORD '24, *Secretary*, 208 Draper Avenue, Solvay, N. Y.

Technology Club of New York

During the month of March, the following were elected members of the Club: F. B. Jewett '03, Sidney Judson '18, A. F. O'Donnell '19, R. F. Morrison '19, H. M. Hunter '16, J. J. Brown '32, R. T. Puffer '31, J. B. Santrey '06, R. T. Pollock '08, E. S. Worden, Jr. '31, J. E. Ryan '28, and J. McGrail '23.

The annual meeting of the Club, held the evening of May 7, was attended by over 100 members. In his report, President Burbank briefly summarized the accomplishments of the year. The splendid record of new members, 53 having joined since the last annual meeting, was due in great part, he said, to the efforts of the Membership Committee, under the enthusiastic leadership of M. B. Landers. Another high spot of the year was the placing of 53 men in positions, and the hope was expressed that since one man was

placed for every new member, that the succeeding year would see both increase.

The election of officers for the 1934-35 season was then held, and the following slate carried unanimously: President, James A. Burbank '16; Vice-Presidents, Page E. Golsan '12, Duncan R. Linsley '22, R. J. Marlow '17, Warren Norton '21; Treasurer, A. T. Glassett '20; Assistant Treasurer, E. C. Hughes '31; Secretary, A. S. Weil '01; Assistant Secretary, M. Male '29; Governors serving to 1937, R. L. Ahearn '16, Marion S. Dimmock '22, and A. L. Hamilton '18.

The big feature of the evening was the presence, as the guest of the Club, of Professor Tubby Rogers, who regaled the members with intimate stories of some of the newer developments at the Institute. In his own inimitable manner, assisted by quite the largest glass of beer seen these many years, Tubby sketched the evolution of policies brought into being by President Compton.

Following the talk, Felix Restivo, the N.B.C. artist, entertained on his accordion, accompanied by the joyous and more or less melodious singing of the members. When, at Professor Rogers' request for the Stein Song, Restivo broke forth into the melody that made Rudy Vallee famous, the expression on the aforementioned professor's face was a sight to behold. Quick to sense the terrible mistake he had made, Restivo instantly switched to our own Alma Mater song, and with a sigh of relief, Tubby joined with us in making the welkin ring.

Informal discussion and general good feeling after the meeting was aided and abetted by a goodly supply of beer, cheese, and pretzels. The following members, grouped by classes, were present at the meeting: '86, J. C. Duff; '01, A. L. Weil; '03, C. E. Chase; '04, W. A. Evans; '05, M. B. Landers; '06, A. P. Mathesius; '09, P. M. Wiswall, C. T. Wilson; '11, Tom Killian; '12, Page Golsan; '16, J. Farthing, J. A. Burbank, R. L. Ahearn; '17, V. Panettiere, C. D. Proctor, R. J. Marlow; '18, F. L. Warner, D. W. MacArdley, A. L. Hamilton; '19, J. G. Strobbridge, A. R. Wiren, O. A. DeLima; '20, A. T. Glassett, H. G. Gray, L. D. Wilson; '21, S. E. Bradford, W. K. Avery, A. W. Norton, N. H. Lare, W. J. Knoepke; '22, G. A. Noveck, M. S. Dimmock, L. Mackenzie; '23, F. P. Squibb, L. L. Tremaine; '25, F. W. Preston, M. L. Radoslovich, C. J. Enright, H. Bishko, H. G. Bacon; '26, I. C. Salmon, W. H. Latham, S. J. Coles; '27, J. B. Bell, K. A. Smith, F. J. Crandell; '28, A. A. Archibald; '29, W. W. Schormann, C. Roggi, J. G. Sullivan, H. F. Dickinson, K. L. Horgan, J. J. Llanso, M. Male, J. F. Hale, A. C. Pforzheimer, T. J. Ewald, M. Brimberg, J. Happel, R. V. Does; '30, K. G. Bucklin, R. T. Kieff; '31, J. T. Sherman, N. C. Thomas, C. Broder, H. D. Kamy, L. A. Kolker, F. H. Simon, L. A. Schuttig, A. R. Partington, E. C. Hughes, J. W. Bahr, F. A. Lutz, G. D. Shellard; '32, E. J. Mack, S. S. Rudnick, W. C. Launder, J. A. MacDonnell, C. H. Martin, N. L. Haight, J. C. Lyon, E. A. Eddy, J. C.

French, W. A. Meyer, J. J. Brown, G. H. Fritzinger; '33, W. B. Hustan, V. L. Parsegian, S. I. Allidice, L. V. Dewar, E. S. Goodridge, R. B. Ripin, K. Manley, G. Henning, Jr., C. A. Eckwall; '34, R. M. Emery, Coxswain of the Crew. — The following guests of members were also present: J. Sullivan, R. E. Horsey, G. H. Gorbell, A. B. Miller. — MILTON MALE, *Assistant Secretary*, 71 Broadway, New York, N. Y.

New Haven County Technology Club

The New Haven Club has enjoyed a very successful season, which started off with a meeting at the home of Charles E. Smith '00 in New Haven on October 24. This meeting was addressed by Mr. Holcomb '04, Tech alumnus and CWA engineer for Rhode Island and Connecticut. The election of the following officers was announced: President, Harold G. Manning '12; Vice-President, Marshall Wellington '16; Treasurer, Thurston Meriman '09; Secretary, Thomas R. Hartigan '32; Member of the Governing Board, Charles E. Smith '00.

The next meeting was held in Waterbury at the University Club and was devoted to a talk by William R. Williamson on his trip to South America and return by airplane. Slides and souvenirs gave an additional interest to the talk. — On Wednesday, December 13, however, we had one of the best meetings of the year when Dr. Robert J. Van de Graaff spoke about his high-voltage research work at the Institute. The talk was given at the Mason Laboratory Lecture Hall of Yale, and attracted a large number of engineers who were not Tech alumni. A dinner was held previous to the meeting.

Our annual dance, held at the Yale Faculty Club, on January 26, was a huge success socially, being enjoyed by all who attended. — The annual joint meeting with the Hartford Club, originally scheduled for February 28, was held at the Waterbury Club after a postponement due to the blizzard. Mr. Fitze of the Sperry Gyroscope Company spoke, his subject being "The Sperry Pilot for Automatic Flying." Movies and slides illustrated the talk.

In April we decided to do a little missionary work for the Institute, so we had Dr. Earl B. Millard come down from Cambridge and give us a little information about the activities at M.I.T. His talk, together with the Technology movie and Dr. H. E. Edgerton's '27 high-speed movie, proved of great interest to the large number of secondary school students present. The club even hired a large bus to bring the students to the meeting from the outlying districts.

The club was particularly honored this year in having one of its members, Charles E. Smith, elected President of the Alumni Association. The honor accorded Mr. Smith is well deserved as he takes a very active interest in alumni affairs. — THOMAS R. HARTIGAN, '32, *Secretary*, 147 Abbott Avenue, Waterbury, Conn.

Berkshire Technology Club

It was through the efforts of John M. Naughton '24, Comptroller of the Pittsfield Third National Bank and Trust Company, that the Technology movie was shown in Pittsfield on May 17 before a small alumni gathering, which included: E. A. Basilio '28, H. G. A. Black '10, Fred J. Cote '16, F. G. Feeley '97, Earl E. Ferry '12, A. W. Hough '19, P. B. Holden '23, E. H. Lockey '21, J. M. Naughton '24, A. W. Pierce '91, G. H. Porter '18, W. L. Root '96, W. L. Root, Jr. '35, D. M. Wheeler '68, J. McA. Vance '91. The movie "Technology" was also shown before the boys of Pittsfield High School.

At this meeting the question of reviving the Berkshire Technology Club was discussed, and it seemed to be the unanimous opinion that such a group could serve a useful as well as an interesting purpose. Consequently, J. McA. Vance, who is the legal President, appointed a committee consisting of Earl E. Ferry, A. W. Hough, and J. M. Naughton to arrange the reorganization. This committee plans to arrange for another meeting in the near future, at which time a slate of officers will be presented. — JOSEPH McA. VANCE '91, *President*, 201 Wendell Avenue, Pittsfield, Mass.

Technology Club of Panama

For many years Captain Roy Warren Ryden '07, naval constructor, U.S.N., has been superintendent of the mechanical division, Panama Canal. His services end in June this year and he expects to go to Washington, D. C., where he has been ordered for a year's duty at the Army Industrial College. The following is copied from the *Panama American* of Sunday, October 25, 1934: "In 1906 he was selected by the Navy Department to take a special course in warship design and construction at the M.I.T., where he completed the three-year course with an M.S. degree. He has served in various navy yards, including Portsmouth, N. H.; Norfolk, Va.; Olongapo, P. I.; and Puget Sound, Wash. During the World War, most of his time was spent in the Orient; in China and the Philippines in connection with the inspection and repairs of German merchant vessels that were taken over by the Government; and in Burma in connection with the purchasing of shipbuilding materials.

"Captain Ryden's duty with the Panama Canal as superintendent of the mechanical division has been divided into two terms. He served from 1921 to 1924 and then in June, 1929, he returned here to the same office. During his absence, he served two years at sea on the staffs of Admirals A. H. Robertson and M. M. Taylor. He says the reason he wanted to come back to the zone was not only because he remembered how very pleasant he found life here, but also because he had made many friends here. . . .

"Captain Ryden is probably one of the most generally popular and best-liked men on the Canal Zone. He has made many

friends, and he will be greatly missed. He has apparently entered into all of his many activities whether work or play with heart and soul. As a golfer few have accomplished as much. He has won innumerable prizes and his name is closely associated with Isthmian Golf."

Captain Ryden's present assistant is Lieutenant Roy T. Cowdrey '23. Lieutenant Wesley M. Hague '23, a former assistant, is now stationed at Mare Island Navy Yard. Major W. E. R. Covell '23, assistant engineer of maintenance, has taken up golf and has succeeded in breaking 100 several times.

My young aviator friend has been giving me flying instruction in his dual control plane, a Taylor Cab, and I am now nearly ready to solo. There is no thrill in the world like flying a plane. — Major Kenneth T. Blood '09, is now at Fortress Munroe, Virginia.

The Sunday, May 6, number of the *Panama American* contains a feature article on the history of the famous "Black Cat" Regiment called the 11th Engineers, Corozal, Canal Zone, with photographs of the present commanding officers. Prominently placed is the photograph of Major Holland L. Robb '21, commanding the 2nd battalion. This regiment celebrated their 17th birthday on May 2 with a holiday which began with an impressive ceremony at the post movie hall, Corozal. Speeches were made by prominent army and Canal Zone officials in praise of the famous regiment which sailed for France in July, 1917, and participated in many important battles, and which was reorganized after the War as a combat unit in the Canal Zone.

The Secretary designed the air mail stamps in use in the Canal Zone, with denominations of 5¢, 10¢, 15¢, 20¢, 40¢, and \$1.00, all of the same design, the difference being in the color. — MEADE BOLTON '16, *Secretary*, Box 23, Balboa Heights, Canal Zone.

Technology Club of Paris

Ten members of the Paris alumni group got together at the Paris University Club on April 20 as a result of a call for all the alumni in the vicinity to meet and discuss existing conditions and the future of the Paris Club. It did not seem feasible to have a club in Paris with weekly luncheons or monthly dinners and a really active program such as obtains in many of the local clubs of the United States, but the organization will be continued for occasional meetings on special occasions, such as times when there are visitations by people from Technology. Welles Bosworth '89 will act as President and George Bakeman '13 will serve as Secretary. Mr. Bakeman will also maintain in his office various Technology publications and be prepared to act as headquarters for information on Technology affairs for any inquiry that may come to him in Paris.

The alumni present were: Alexander S. Garfield '86, F. Gelett Burgess '87, Welles Bosworth '89, Alfred G. Kellogg '09, Lester T. Forbes '14, Frank Didisheim '22,

S. J. Henrikssen '22, Theodore T. Miller '22, George J. Leewitz '23, and the Secretary. — GEORGE W. BAKEMAN '13, *Secretary*, Rockefeller Foundation, 20 rue de la Baume, Paris 8°, France.

Technology Club of Shanghai

The March meeting of the club was held in the International Recreation Club, 722 Bubbling Well Road, on March 15 at seven p.m. A Chinese dinner was served to 31 members who were present that evening. The hosts were Messrs. A. E. Golding, Frank C. Ede, Joe W. Young, M. S. Zhen, and Z. P. Zien.

Owing to the absence of the Chairman, K. T. Lee, the meeting was called to order by the Secretary, Z. Z. Li, after the dinner. The minutes of the last meeting were read and passed. A letter from Professor Locke was then read in which the professor introduced to us an alumnus of the Institute, Gorham Dana, Class of '91, who is taking a round-the-world trip with Mrs. Dana and is scheduled to arrive in Shanghai around the 28th of March. It was unanimously passed that the officers of the club be authorized to arrange a dinner party in honor of the couple.

A special meeting was arranged in the form of a luncheon party, held on Thursday, March 29, at 12:30 p.m. at Hung Far Lou Restaurant, 526 Foochow Road, in honor of Mr. and Mrs. Dana. Due to their very brief stay in Shanghai and the pending Easter vacation, time was not sufficient to call out all the Shanghai members, but it was gratifying to have 14 members turn out to greet the visiting couple from Boston. Following a regular Chinese dinner, during which their pleasant company was enjoyed by all, Mr. Dana was asked to say a few words. He spoke of the economic conditions of the States in general and conditions at Tech in particular. He also praised highly the work of President Compton. After wishing the Danas bon voyage, the meeting was adjourned at 2:30 p.m. — Z. Z. Li '22, *Secretary*, Tonying Silk Trading Company, Ltd., 15 Museum Road, Shanghai, China.

M.I.T. Club of Peiping

The first Peiping-Tientsin Technology reunion was held on January 23 at Café Riche, Tientsin. A few days before the meeting, some alumni in Nankai University were humming to themselves: "For it's always fair weather, When good fellows get together." The meeting was no sooner decided upon than invitations were sent out. Though more people could have turned out had the invitations been delivered earlier, those 24 alumni and their wives who attended represented Tsing Hua University (Peiping), Nankai University, Peiyang Institute of Technology, Peiping-Liaoning Railway (Tientsin), and Yung Li Salt Refinery (Tangku). Dr. Chang-Ming Lu, X, '28, of Central University, Nanking, and Dr. Chih-Kung Jen, VI, '28 of Shangtung University, Tsingtao, came one day too

late and just missed the reunion. They enjoyed meeting their old schoolmates nevertheless.

Mr. Huei-Ping Wang, VI, '26 presided over the dinner in a room halfway in size between the North Hall and the Grill Room. Before we fell to the dishes, he stood up and threatened to give a long, long speech. But our fear was not justified, for after calling our attention to the item Beef Stew à la Walker in the menu, our favorite dish at Tech, he resumed his seat.

Soon dinner was served and greedily devoured. There flashed upon the minds of many of us the picture of the lady with tortoise-shelled glasses at the cash-register in Walker, to whom a Chinese student with an order of beef stew must by now have become an enigma which even her nimble mind and nimbler fingers cannot unravel.

After dinner Dr. Te-Pang Hou, X, '17 was called upon to say a few words. Dr. Hou was the only person present who studied at the Tech on Boylston Street. He talked on the difficult days during the war when Tech was passing through the gravest financial straits. The story was new to the rest of us who studied at Tech in the more prosperous years and have always believed that Tech is an ever-growing institution with unbounded hopes before it.

We did not, however, feel disheartened, for the timely report of President Compton had removed from us every doubt with regard to the effect of the world-wide depression. After Dr. Hou, Mr. Mo-Chih Li, who left America only last October, reported on the recent changes at Tech. The many questions that were bandied to him after his talk showed our interest in the Alma Mater. To end the evening's program, we sang "Take Me Back to Tech," accompanied by Mrs. Ke-Chung Chang at the piano. We also sang the Stein Song, if not actually with steins in hand, certainly with glasses of port decorously put before us.

A mixed basket-ball match was played off next morning on the Nankai ground between the Peiping and Tientsin teams. Mrs. Hung-Yuan Chang scored the most points, but, alas, for the visiting team. Some joined a trip to Yung Li Salt Refinery on the 27th.

The meeting was promoted by Technology Alumni who are faculty members of Nankai University. Although there are only two engineering departments in this university — electrical and chemical — there are six faculty members, all of whom are Technology graduates as follows: K. C. Chang '25, X-A, Head of the Chemical Engineering Department; H. Y. Chang '25, X-A, Director of Research Laboratory of Applied Chemistry; T. Y. Lu '28, VI-A, Head of the Electrical Engineering Department; C. H. Chao '30, II, Professor in English Department; H. T. Wong '26, VI, lecturer in electrical engineering; J. Chang '29, I, lecturer in electrical engineering. — CHEE S. HSIN '14, *President*, Middle School, Chen Hien, Che-Kiang, China.

CLASS NOTES

1875

At the 52nd annual meeting of the Class, held at the Engineers Club, Boston, on May 22, it was unanimously voted that the writer should take the place of the late Joseph W. Homer as Secretary-Treasurer of the Class. Having served for 52 years as President, it would appear that Mussolini and Hitler now have nothing on the writer. As there are only 10 members of the class living, there was no keen competition in the election.

Those present were: Atkinson, Eddy, Dorr, and Hibbard. Letters were read from William H. Bush, who is permanently settled in Orlando, Fla., and from Frank Lyman of Northampton, Mass. We regret that the latter has suffered a slight shock which prevented his attendance. Resolutions were presented upon the death of our late Secretary and they were properly recorded. — THOMAS HIBBARD, *Secretary*, 4 Ridge Road, Milton, Mass.

1877

Cecil Hobart Peabody died at the Peter Bent Brigham Hospital on Friday, May 4, after a brief illness of bronchial pneumonia. He was born in August, 1855, at Burlington, Vt., son of Selim and Mary Elizabeth (Pangborn) Peabody. He was a descendant of Francis Peabody, who settled in Ipswich and Topsfield in 1635.

He entered M.I.T. in the second year, coming from the Amherst Agricultural College, where his father was a professor. After graduating, he spent a year in miscellaneous work. In the summer and fall of 1878, he was connected with the Western Union Railroad repair shop. In December, 1878, he sailed from San Francisco to take the position of assistant professor of mathematics and engineering in the Imperial Agricultural College at Sapporo, Japan. This college is located on the island of Yesso, about 500 miles northeast from Tokio and is modeled after the agricultural college at Amherst. He remained in this position until 1881, when he returned to America and was assistant professor of mechanical engineering for two years at the University of Illinois. In 1883 he came to M.I.T. as an instructor, becoming assistant professor of steam engineering in 1884. From 1893 until his retirement in May, 1920, he was professor of naval architecture and marine engineering.

Professor Peabody instituted a movement several years ago to bring American shipping to such a state of perfection that the United States would lead the world, not only in naval supremacy but in marine commercial enterprises as well. He had in mind reclaiming for the United States the reputation which was hers in the days of the clipper ships, and also of securing for American maritime transportation lines the license for carrying imports and exports to and from this country. He was author of the following textbooks: "Notes on Governors and Flywheels," 1885; "Notes on Valve

Gears," 1887; "Tables of the Properties of Saturated Steam," 1888; "Thermodynamics of the Steam Engine and Other Heat Engines," 1889; "Valve Gears for Steam Engines," 1890; "Steam Boilers," with E. F. Miller, 1897; "Manual of the Steam Engine Indicator," 1900.

He belonged to the following societies: Fellow of the American Academy, Boston; American Society of Mechanical Engineers; American Society of Naval Architects and Marine Engineers, and member of the Council; Society for the Promotion of Engineering Education; Technology Club, Mathematical and Physical Club. He was holder of the third-class Imperial Order of the Rising Sun (Japan).

He was retired on a Carnegie Foundation pension. Later he took up painting in water colors at which he became very proficient. He resided at the Copley Plaza with his wife, Sarah Angeline (Knight) Peabody, whom he married in 1885. He is survived by his widow, a sister, Mrs. Winthrop Girling of Glencoe, Ill., and a brother, Dr. Arthur Peabody, of Madison, Wis. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1885

The 49th annual meeting of the class was held at the Exchange Club, Boston, May 17, with the largest attendance we have had for a decade. Doane, who banished himself to Wyoming ages ago, is now in this state again, and it was good to see him. Alex McKim, who has been traveling in Germany for several years, was on hand and Bob Richardson came on from New York. It was a great joy to greet Charlie Brown, who told us that he was practicing up his good right arm for his official duties next year. His pink shirt and apron are in the wash, but he suggests that we provide him with a louder and funnier diamond stud.

The principal entertainment was provided by Al McKim, who gave us a picturesque and absorbing story of his travels, particularly a graphic picture of the art of dueling as practiced in his day and at present. It is to be remembered that Alex studied several years in Germany after he was graduated from the Institute and then took his architect's degree at Columbia, and that he was a star in all forms of sword dueling, whose prowess is still bright in student tradition. He was an honored guest at all the dueling clubs in Germany and Switzerland where he officiated at their bouts. Incidentally, he took up special studies at 12 universities while abroad.

The program for the 50th anniversary next year was the subject of discussion. After attending the graduation exercises of the Class of 1935 and the reception given by President Compton to the semi-centurions, the Class has been invited to an informal tea by one of its members. We shall want to be off by ourselves as soon as we can, but as there is to be a five-year reunion of the Tech alumni in 1935, we may feel that we have an obligation to attend at least one of the functions. As to our own reunion, there was a gen-

eral desire to find some comfortable, quiet place, preferably on the Cape near the water, where we can just "set" and ruminate. As we write this, a letter comes from Dave Baker who has an alluring prospect at Wellfleet, near Provincetown, where we can have all the comforts of home and a country club, without buying either. It looks mighty good, but don't let that deter you if you have another suggestion.

An interesting incident of the meeting was the presentation to the Class by the Secretary, as proxy for Richard Pierce, son of Dick Pierce, of a beautiful silk United States flag, the one that was used in our memorable stunt at Nantasket in 1916, a performance that was conceded to be the most outstanding of them all. Dick Pierce was the inventor of it and directed it and we shall always think of him and that happy time when we see that flag.

It was a happy coincidence that Bert Pratt, who was our first president, was elected permanent president of the class. Those present were: Baker, Brown, Bedlow, Choate, Demson, Doane, Fiske, A. C. Fuller, Hildreth, Litchfield, Little, McKim, Nye, Parsons, Plaisted, Rawson, Richardson, Sands, Schubmehl, Sise, Pratt, Steele. Letters were received from our most distant classmates: Chip Chapman, of Raton, N. M.; Cutter, Inglewood, Calif.; Bates, Olympia, Wash.; and Wilder, Daytona Beach, Fla., sending their best, and speculating about their attendance next year. One of the most welcome communications was from Mrs. Boveri (Marcella I. O'Grady), professor of biology at Yale University, New Haven, saying that she would attend the 50th anniversary of the class if she is in this country. — I. W. LITCHFIELD, *Secretary*, 165 Winchester Street, Brookline, Mass.

1889

On the evening of March 13 a notable convocation of notables, practically all Presidents or past Presidents of something or other, convened at the Boston Architectural Club. Reading from left to right, or the other way around if you prefer, there were rubicund President Thurber of '89, scholarly former President Williston of Wentworth, Arkwright's genial E. V. French, Stone & Webster's reliable Hunt, '89's incomparable Juddy Wales, erstwhile M.I.T.'s Laws, handsome and white-haired Luther W. Bridges, Boston Transit Commission's rotund Lewis, New York's distinguished Orrok, Northeastern's learned William Lincoln Smith, Lowell's eagle-eyed General Pearson, and ye scribe, who this year for nobody knows what reason is President of the Boston Business Men's Art Club, the most important art association in Greater Boston (fact) (adv.).

A luscious pre-depression dinner of broilers and fixin's with post-repeal trimmings having been discussed and the inner man satisfied in a manner of speaking, the outer man (or men) drew up their chairs in front of the crackling log fire and proceeded to vote resolutions to the effect that *whereas*, unknown to

1889 Continued

everybody, our 45th anniversary had "snuk up" on us without anybody knowing it, and as nobody knew where we might be next year, we would, revolution or no revolution, have a reunion, which would be a pippin, at the Corinthian Yacht Club, come June, and everybody was to begin saving up for same, as the winter will probably be over by that time, and there won't be much spring plowing done this year anyway so as to keep up prices of last year's potatoes. A committee was, without much opposition, made up to direct, organize, and enforce such a reunion and due notice of same will be mailed sooner or later.

Note: The Secretary wrote this the day after the dinner but the County paper only comes out just so often, you know, so the picnic will probably have gone into history by the time this is printed. Juddy Wales was also directed to compose a poem suitable to be set to music in honor of the occasion. This effort practically exhausted the energies of the gathering which later on dissolved after carefully examining all the containers for possible lurking "dividends" and resolving to never miss another occasion of the sort.

The Boston *Herald* of April 26 carried the following item: Ralph Sweetland, 70-year-old golfer, of 45 Walnut Street, took a lesson at the Wildwood Club this morning to try and improve his skill with a No. 3 iron. Encouraged, he decided to try again, playing with F. C. Bishop, also of this town. The ninth hole, 165 yards, seemed to offer a good chance to use the iron. It worked perfectly. Sweetland got a hole in one."

The Secretary has learned of the deaths of Louis M. Latta on October 28, John W. Cabot on February 17, and Edward M. Harrington on March 9, but has not been able to obtain any particulars. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

1890

Word was received some time ago from Darragh de Lancey advising us that he was going on a trip to the South. A recent newspaper clipping contained a notice of the engagement of his daughter, Miss Margaret Spencer de Lancey, to Dr. Joseph Linn Hetzel, of Waterbury, Conn. — A card has been received announcing the marriage of James Clark, Jr., of Louisville, Ky. — An article by George E. Hale appeared in the April *Atlantic* under the title "Deeper into Space," the new telescope of our Universe.

Herbert C. Tuttle passed away March 6 at Babylon, N. Y., in his 65th year. The Secretary has no further details. — Word has also been received of the death of Harry A. Kennicott, of Nebraska City, Neb., who passed away February 7. A newspaper account of his career follows:

"Harry Adams Kennicott, 70, a native of Otoe County, ill for the past ten years of creeping paralysis, died at the family home, 812 Park Avenue. . . . Mr. Kennicott was born in a log cabin on a farm eight miles southeast of Nebraska City, December 20, 1863, the son of the late Mr. and Mrs. William Edward Kennicott,

who came to Nebraska Territory in 1856, settling in Otoe County. He was educated in the schools of Otoe County, attended Doane College, Crete, and graduated from the M.I.T. in 1890, in civil engineering. He was one of the surveyors employed by the Burlington when the bridge was erected here.

"On October 1, 1921, he was married to Miss Ella Davis of Nebraska City at Excelsior Springs, Mo. During 1924 Mr. and Mrs. Kennicott resided at Ft. Lauderdale, Fla., seeking a milder climate in the hope of benefiting the former's health. They returned to Nebraska City in September, 1925. . . . Although never very active in politics, Mr. Kennicott served two terms as deputy treasurer of Otoe County, retiring from office in 1924 because of failing health. . . . He was well known in the community where he had spent his entire life. He is survived by his widow and one brother, Frank Kennicott, Nebraska City. . . ."

The following changes of address have been received: Walter F. Cook, 2 Ruskin Street, West Roxbury, Mass.; Harold B. Roberts, 100 Clareville Avenue, Upper Montclair, N. J.; William B. Poland, Room 1207, Hurley-Wright Building, Washington, D. C.; Charles M. Watson, 7 Gloucester Street, Boston, Mass.; Gardner T. Voorhees, 870 Foxdale Avenue, Winnetka, Ill. Austin D. Boss is at present in Ankona, Fla.; John M. Howells at Kittery Point, Maine; Elwood Emery at 1625 Warren Boulevard, Chicago, Ill.; and Charles O. Churchill is now with the Steel Union Company, Round Hill, Springfield, Mass. — GEORGE L. GILMORE, *Secretary*, 57 Hancock Street, Lexington, Mass.

1891

Our old friend and classmate, Arthur Forrest Shattuck, passed away on April 11 at his home in Beverly Hills. George Hooper and Charlie Garrison were pall bearers at his funeral. He had been in poor health for some time but our last reports from his family were encouraging, and we had hoped that he was improving. He was a native of Boston, but after graduation spent most of his business life in Detroit, retiring from business in 1916 and moving to California. He leaves a wife, a daughter, Mrs. Ruth S. Wright, and a son, George P.

He was interested in many activities during his business career, including the Electrochemical Society, Inc., Alumni Association of M.I.T., The American Forestry Association, The American Association for the Advancement of Science, National Geographic Society, The American Institute of Chemical Engineers, Franklin Institute, National Business.

The following is from a recent letter from Mrs. Shattuck to George Hooper: "After graduating Forrest spent six months in California. The following year he worked at the World's Fair in Chicago as assistant chemist. The next year he worked in Lawrence on water analysis under Mr. Allen Hazen, going from there to the Solvay Process Company of

Syracuse, N. Y. After three years he was transferred to the Detroit plant of the Solvay Process Company as chief chemist and remained until the year 1914. Mr. Green sent him to California to report on a chemical and potash plant. He continued in that work for several years. He then resigned and since that time has remained retired in Beverly Hills. He also organized the first chemical society of Detroit, and was asked to become President but could not accept on account of his hearing."

George Hooper writes of the services at Shattuck's funeral at Forest Lawn Cemetery between Pasadena and Hollywood. Three of the other pall bearers were contemporaries of Forrest's in the Solvay Process Company. Of the four '91 men in that Company all that is left is Walter Hopton, Hathaway and Jordan having passed on.

Bill Hawley acknowledged one of Barney's birthday greetings. He is living in Taunton and reports that he and his family are all well.

Another letter from Charlie Hanington says that he is out again after his serious accident, but hobbling around with a big stick. He says that they had a very mild winter in Denver, hardly needed an overcoat, which sounds funny to us New Englanders.

Sometime ago we had a letter from Robert Ball from Cambridge, England, part of which follows: "I have heard very little directly from American friends this year, probably because everyone is so absorbed in their state of business brought about by the prevailing depression. Gerard Swope sent me some literature bearing upon the proposals that he has advanced toward a solution of the difficulties. It is nice to think of a Tech man so prominent in these matters as engineers are not as a rule concerned in politics. We follow over here the fortunes of the President's schemes with intense interest, just as we would any other great experiment to put things right. I think we have turned the corner, and while business is still very low, there are decided signs of improvement.

"My daughter, Stella, is still in London at her job and my son is in the Colonial Civil service. He has spent the last year in Trinidad and is now off to Kenya Colony. He finds the cold of an English winter quite trying after the tropics. In Kenya the problem most urgent is the destruction of the locusts which descend on the crops and leave nothing but devastation behind. There is now a proposal to deal with the scourge by air planes but the real solution of the trouble lies in hunting out their breeding places and destroying them before they get wings. Unfortunately these centers are away in the Belgian Congo and are very inaccessible for white men. The destruction of the insects on the wing is only a palliative and not a cure."

Will Bassett wrote Barney about his Birthday party in March and adds, "I did considerable traveling in the winter in spite of a bad cold and got rather run down, so I am having to take things a bit

1891 Continued

easy just now. I get to the office every day and to New York occasionally. Met Swan at the Engineers Club recently and we had a good chat. Aiken has a stepson here at the Roxbury School in Cheshire and he and Mrs. Aiken call on us occasionally when they are here.

"I have been nominated for the Presidency of the American Society for Testing Materials and may be elected at the June meeting as I understand there is no other candidate.

"I hear from Spooner occasionally and also from Hersam but don't often meet men from '91, although I am in touch with many Tech men.

"Mrs. Bassett was very much pleased to be remembered. She is at present very busy preparing for the garden. I am also spending spare time on the garden and also on poultry and the cows. Somehow chemistry and the feeding of animals and plants rather go together. We are planning on Vineyard Haven for the mid-summer and taking the three grandchildren with us. I am already overhauling the bluefish lines."

Francis Holmes is Chairman of Code Authority for the Cordage and Twine Industry. He writes of the birth of another grandson, Ben Francis Hawkins, on February 21. — Charlie Aiken has gone to Franklin, N. H., for the summer. The latch is out for all '91 men (Webster Lake). — A card from Harry Young mentions a month (March) spent at Montego Bay, Jamaica. Great place for bathing with water temperature about 80°. "Good place if you like hot weather."

Charlie Garrison went to the movies in Vancouver and notes the following signs: "Birks" — "Diamonds" — "Exit." It pays to advertise.

Several newsy letters from Garrison tell of his wanderings on the Pacific Coast. They are most interesting but we are limited in space and can only mention the high spots. In March he took a house at La Jolla for a short stay and tells of numerous trips made to Balboa Park, Julian, and down into Mexico. He called on Arthur Alley at National City and Arthur and his sister took them for a drive to Del Mar. About the first of May he started on a trip north to Victoria and Vancouver. His letter from Berkeley tells of a call on Ernest Hersam. Then up through the Redwood country to Oregon and Washington. Charlie recounts a personal introduction to a tree 1,250 years old, which must be so. Evidently Oregon has fine roads and grand scenery, but Washington not so good. Fine hotels (or inns) at Gold Beach, Agate Beach, and then to Tillamook, famous for making cheese, then to Astoria and across the Columbia River to Washington. Astoria, at the mouth of the Columbia, is an old trading post. Charlie's last letter says he expects to reach Victoria about May 8. The Secretary suggests that anyone wanting information about motoring on the Pacific Coast apply to Charlie.

A card from Linfield Damon to Barney from Ceylon reads: "I am on the Indian Ocean on the way to Ceylon from Su-

matra, have visited most of the Islands of the South Seas, some for the second time. Of all the different peoples, those in Bali were most interesting; those in New Guinea and Pulo Nias the most primitive and only one generation removed from cannibalism; in fact, not wholly removed for it is still practiced in the interior."

Gorham Dana has sent a number of very interesting letters from various ports on his trip around the globe. We can only mention a few of the "high spots" because of Review space restrictions. A letter en route from San Francisco to Honolulu mentions meeting a Mrs. Favor whose husband is a cousin of George Favor and didn't know whether George was dead or alive but suggested our writing his sister in Chicago. This must have been a gay trip as Gorham tells of taking movies of a Hula Hula dancer on board ship. The next letter from Honolulu tells of the scenic beauties and interesting features of that island. Prof. Jagger, formerly of Tech, is the U. S. Geologist at Kilanea, the famous volcano. The local Tech club gave Gorham a luncheon at the Pacific Club.

On the way to Japan and passing the Meridian, they lost a day, which happened to be Mrs. Dana's birthday, so that makes her one year younger than she thought she was? Gorham gives details of the SS *President Coolidge*, the chief item of interest (?) being Grinnell Bulb Thermostats to give alarm in case of fire (see the Secretary for details). Evidently a fine boat with all the modern luxuries.

The next letter, from Nikko, Japan, mentions meeting a man named Damon who is plant engineer for the Plymouth Cordage Company. It was snowing at Nikko but warm in the lowlands. Speaking of the villages, "the houses are all wood, very flimsy and a bad fire risk." This seems to be amply demonstrated by recent conflagrations.

The trip from Japan to China was on a small Japanese steamer with only a few passengers. Evidently the Yellow Sea was rough and cold. On request, a Japanese dinner was served one night, but Gorham was the only one to eat it. "They set a tray before you with six bowls of strange looking food including lobster, sweet potato, spaghetti, and other things that I never saw before and never want to again. Then they bring you a bowl of warm rice and you are supposed to eat the rice alternately with dabs of the other food. Chop sticks were served with it and I did my duty — eating part of the rice and such of the other dishes that I could stand with chop sticks. I filled up at the end with an orange, an apple, crackers, cheese and nuts." At Shanghai he had luncheon with the Tech Club, real Chinese affair. Then follows a letter from the Dutch East Indies, with stops at Macassar and Bali.

By the time this is issued, Gorham will be back again after visiting India, Egypt, and so on, and at our next reunion we will expect a personally conducted tour with movies. — HENRY A. FISKE, Secretary, Grinnell Company, Inc., 260 West

Exchange Street, Providence, R. I. BARNARD CAPEN, Assistant Secretary, The Early Convalescent Home, Cohasset, Mass.

1893

Mayor Mansfield of Boston recently reappointed Frederic H. Fay to serve for his fourth five-year term as a member of the Boston City Planning Board, of which he has been chairman since 1922. Planning is one of the Class Secretary's avocations, he being a Director of the National Conference on City Planning, a member of the Metropolitan Planning Division of Massachusetts, and the representative of that state on the New England Regional Planning Commission.

Charles Malcolm Taylor, at the tender age of 64, has spent the past scholastic year as a freshman in the Boston University School of Law. After his graduation with the class in electrical engineering, Taylor held positions with the Atlantic Works, East Boston, the Fore River Ship and Engine Company, Herreshoff Company at Bristol, R. I., the Edison Electric Illuminating Company of Boston, and the General Electric Company at Lynn. Then, through civil service examination, he entered the civilian personnel of the United States Navy and for years held the position of supervising draftsman at the Boston Navy Yard. By recent congressional naval ruling, making retirement compulsory after 30 years' service, Taylor was retired on a full pension, thus giving him the opportunity the past winter of gratifying a life-long desire for the law. He does not have any particular ambition to practice but he expects to get his degree and satisfy his appetite for legal lore. As Boston University's oldest freshman, he got a great thrill out of his past season's work and the contacts made with "contemporaries" almost young enough to be his grandchildren.

George Marshall Yorke, Vice-President of the Western Union Telegraph Company and head of its engineering department died on Sunday, March 18, of a heart attack in his home at 57 Seventh Avenue, New York City. He spent the previous night at his summer home at Point Pleasant, N. J., and was listening to the radio when stricken. Yorke was born April 27, 1870, at Lowell, Mass. He was graduated with the class in electrical engineering and immediately entered the employ of the American Telephone and Telegraph Company at its Boston office. There and in Philadelphia, Chicago, and New York his work with that company was in the long-distance lines department and he rose to the position of Assistant General Superintendent of Plant. In June, 1911, he became associated with the Western Union Telegraph Company as an engineer, was appointed General Superintendent of Plant in 1913, and was elected a Vice-President of the company in April, 1916. During the war, Yorke was a Major in the Signal Corps on the staff of the Chief Signal Officer of the Army, having to do with methods of securing and instructing personnel for the Signal Corps operations in France, and

1893 Continued

with communication between America and Europe during the war period. He was a member of the Operating Board, United States Telegraph and Telephone Administration in 1918, during the period of government operation of telephone and telegraph systems. He was a director of the American District Telegraph Company, New Jersey; the Gold and Stock Telegraph Company, the Stock Quotation Telegraph Company, the Teleregister Corporation, the Vermont and Boston Telegraph Company, the Southern and Atlantic Telegraph Company, International News Ticker Company, New York Mutual Telegraph Company, and Cleveland and Cincinnati Telegraph Company. He was a member of the American Institute of Electrical Engineers, Franklin Institute of Philadelphia, and the Technology Club and City Club of New York. He had a winter residence at Rockledge, Fla., a city home in New York, and his summer home at Point Pleasant, N. J. On April 8, 1932, Yorke married Miss Eunice C. Booth of New York City, who survives him.

The following changes in address are noted: Charles V. Allen, 40 Fifth Avenue, New York City; George W. Andrews, 3284 Parkland Drive, Cleveland, Ohio; Howard R. Barton, 88 Church Street, Englewood, N. J.; Charles E. Buckholz, 1149 Boyd Street, Watertown, N. Y.; Ariel B. Edwards, 302 Main St., Woonsocket, R. I.; William H. Graves, 30 Ipswich Street, Boston, Mass.; J. Fred Hinckley, 9115-215 Street, Queens Village, N. Y.; Edna W. Moody (Mrs. Herbert R.), Windover Heights, Vienna, Va.; Leo W. Pickert, 345 Commonwealth Avenue, Boston, Mass.; Rev. George B. Smith, Bedford Road, Katonah, N. Y.; Percy H. Thomas, National Press Building, Federal Power Commission, Room 747, Washington, D. C. — **FREDERIC H. FAX, Secretary**, 44 School Street, Boston, Mass. **GEORGE B. GLIDDEN, Assistant Secretary**, 551 Tremont Street, Boston, Mass.

1894

It is a great sorrow to be obliged to report the death of Walter E. Piper who has been prominently identified with the class ever since undergraduate days. Piper was stricken with a heart attack while driving from Andover to Boston and was taken at once to the New England Sanitarium in Melrose, where he remained for a few weeks and the prospect of his recovery seemed good. A second sudden attack, however, proved fatal and he passed away on April 1. Piper's career has been an interesting one and may be regarded as typical of many Technology men. After graduation he spent a year as assistant in general chemistry, then took a position as assistant chemist with the Boston Rubber Shoe Company, later identified with the United States Rubber Company, and advanced from position to position until he was in charge of the two large plants of the company located in Malden and Melrose, and was held in very high esteem by the company because of his splendid integrity and his unusual capacity as an executive. While in this position

he greatly developed the efficiency of the plants and the high quality of their products, and gained a reputation as the man with an unusually thorough knowledge of rubber footwear. He was familiar with American practice and manufacture and also, as a result of numerous business trips to England and the Continent, with the best European methods.

During the World War he offered his services to the Government in connection with the supplies and procurement service and was at the head of the rubber boot and shoe division of the Quartermaster's Department. The service which he rendered in this position was very great, as his exact knowledge of rubber footwear made it possible to control the purchase and supply of these articles with very great economy to the government. After the cessation of hostilities at the time of the Armistice, Piper retired to his place at Sudbury, Mass., but it was not long before he was again in active service in the reorganization of the Tyer Rubber Company at Andover, and also as the controlling director of the President Suspender Company of Shirley. The success of these companies since the War has been very largely due to the efforts which Piper put into their management.

His death came as a great shock to his friends and classmates, many of whom were unaware that he had any physical impairment. Mrs. Piper and three children survive him. To them the sympathy of the whole class is extended.

The October number of *The Review* will carry a full account of the proceedings of the 40th anniversary reunion which is about to begin as these notes go to press. — **S. C. PRESCOTT, Secretary**, Room 10-405 M. I. T., Cambridge, Mass.

1896

John Rockwell has embarked on the air, following the example of such notable people as H. C. Lythgoe '96, Dr. A. W. Rowe '01, R. E. Bakenhus '96, and many others. He broadcasted on the subject of "Nature's Resistant Assets — the NRA of Life," this being one of the series of timely topics on health. It went out over Station WAAB on October 16, 1933, and was so favorably received that it was repeated by request on April 2, 1934. John's talk summarized the sermon that he has been preaching to his patients for years, that the human body should be watched and cared for like a machine, and especially that its reserve energy should not be drawn upon too heavily.

On April 24 Lou Morse dropped in on the Secretary for a few brief moments. He was up here on the business of looking over candidates from the senior class to enter the employment of his Company, the York Ice Machinery Company. Everyone will be happy to learn that he reported that Mrs. Morse was getting back to good health.

The next day Bert Spahr appeared and made a real call. He had recently returned from a six weeks' trip to California, having been snowed in at his home in the Berkshires during the cold winter. He

made the trip out by train and came back by train as far as Detroit, where he bought a car and drove the rest of the way. His son, Kim, took in the western sights with him and they had a splendid opportunity to view the most interesting construction work around Boulder Dam. Kim is at present in the Berkshire School.

The Technology Club of Rhode Island had a bang-up celebration on May 25, in Providence, and the Secretary attended in his official capacity as Alumni Secretary. He had the pleasure of finding Dave Beaman present. Dave reported that he was planning a European trip this summer and would try to get in touch with Arthur Baldwin in Paris and would render a report for publication on his return in the fall. The New Bedford Gas and Edison Light Company, of which Dave is President, has put out a rather unique series of leaflets dealing with historical events of New Bedford. We are also indebted to Dave for having supplied the present address for Tom Bailey, who has been missing for a long time. He can be located at P. O. Box 471, Corpus Christi, Texas.

Brief announcement has been made previously of the death of our classmate John C. Russell. The Secretary is indebted to his widow, Mrs. Hulda S. Russell, for the following account of the active life of one of our class who rendered so much help to his fellowmen: "After leaving the Institute he went to Yale and then entered the journalistic field under his father, the late Martin J. Russell, Editor of the old *Chicago Times*, the *Herald*, and the *Chronicle*. During the War he served as a correspondent at Fort Sheridan and later at Rockford. He was commissioned a captain and served at the Army College at Washington, D. C., as a member of the Military Intelligence division, General Staff, and later as member of the War Plans Division, General Staff. He succeeded Colonel Adna G. Clarke, Coast Artillery Corps, as censor of official photographs and motion pictures. Upon returning to Chicago he did publicity work and several years before his death was appointed to the office of Superintendent of Public Service of Cook County, Chicago, Ill. He was very active in American Legion affairs. He was Past Commander of Black Hawk Post, which he helped organize, and the name of which has been changed to the James C. Russell Blackhawk Post, Past Chef de Gare of the 40/8 and a founder of the 40/8 Convalescent Center at Orland, Ill., where sick veterans are given an opportunity to regain their health. He organized the Combat Medal Men's Association, made up of men who wear the Congressional medal for bravery (and most of these medals from several of the foreign countries). As most of them were very, very young, he was able to help them in many ways and for his services to them and to other young boys and men the Association presents the James C. Russell medal each year to a Boy Scout in his district for some outstanding act of bravery. Last year it was presented on Boy Scout Day at the World's Fair. When he went the men at the Edward Hines Government Hos-

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pital asked that instead of using the regular flag given by the Government, for his work among them they be allowed to provide the flag. He was given full military honors. His body was carried on a caisson drawn by six black horses from the Black Horse Troop, and six months later a memorial service was held at the cemetery 25 miles from here attended by over 500 of his devoted friends. Mr. Russell was always a great reader and student, and spoke very often of the happy associations the Institute had for him. He was a very delightful companion and devoted husband."

Classmates will also be grieved to learn of Charlie Tucker's bereavement. His wife passed away suddenly on May 22.

Gene Hultman, with Mrs. Hultman, took a vacation from his job of Police Commissioner of the City of Boston and made his official report on their cruise as follows:

"We left Boston on February 19 and returned March 29, after making some 12,000 miles. Our adventures seemed pretty tame compared with Myron Fuller's trips.

"Perhaps one of our most unusual experiences was getting from Boston to New York. I think very few of our contemporaries can remember when it took 18 hours to go from Boston to New York by rail. We left the South Station at 12:30 A. M., February 20, due in New York about 6:30 o'clock that same morning. I woke up about the time we should be getting off the train and noticed that the train was at a standstill. I inquired of the porter whether we were in the Grand Central Terminal. I received the shock of my life when we were informed that we were in New Haven, 'stormbound.' We pulled along nearly to Bridgeport and then had to back up to New Haven. We didn't leave New Haven until sometime after 2:00 o'clock in the afternoon.

"This was particularly enjoyable as the *Carinthia*, on which we were to sail was scheduled to leave New York at 11 o'clock that morning. At that, we were better off than most of the passengers because President Pelley of the New Haven Road had his car on the train and kindly invited us to have breakfast.

"After much frantic telephoning to the New York Police, the Boston Police, the Cunard Line and Raymond-Whitcomb, and some other people, we finally arrived in New York and went across the city under heavy police guard to the boat. It had waited for us and some 12 other passengers and sailed about five minutes after we came aboard at quarter of seven.

"The rest of the trip was delightful and, of course, we visited the usual places — Curacao, Caracas, La Guaira, and Trinidad which we had visited several times before, but we had never crossed the Equator. Our next stop was San Salvador in Bahia, Province of Brazil — a much more prosperous looking community than we expected from our previous experience in the West Indies.

"From there we went to Rio de Janeiro, the harbor of which we were, of course, prepared to admire from our reading, but

the city itself was a revelation to me with its beautiful boulevards and modern improvements of all kinds that made for the comfort of visitors. Although my Portuguese is nil, I was much impressed with the kindness, intelligence, and industry of the people. Perhaps they had not been spoiled as much as in some other places by tourists; but wherever we went in Brazil I was very much pleased not only with the courtesy of the people but their general appearance of being an industrious people who also knew how to have a good time.

"From Rio de Janeiro we went to Santos and from there took a remarkable railroad up to Sao Paulo. This railroad is of particular interest as a complete piece of excellent engineering. I think I have never been over a piece of road that was as carefully engineered and finished as this line. The particularly interesting part is that while this line carries quite heavy tunnel work, it was originally started in 1868 when I thought Brazil was pretty much of an unexplored wilderness. I had previously thought that the highway from La Guaira to Caracas was the most interesting scenic road I had ever been over, but the views from the railroad from Santos to Sao Paulo are more surprising and interesting than any I have yet seen. From Santos, we went back to Rio de Janeiro and spent three days more there and had a most delightful visit.

"On the way back we stopped at Martinique and took the drive from Fort de France to St. Pierre, which I think is the finest tropical drive I have ever taken although I have made it now two or three times. From there we went to St. Thomas, one of our own possessions, which I had never before visited, but which held a great interest for me because in the old days it was the stopping place for water and provisions for most of the ships that sailed between Boston and Salem and Africa — a business in which my father was engaged for many years. St. Thomas apparently has had quite a past. Its present is certainly poverty stricken, but I think it offers great opportunities for our country to develop and assist the people there by kind and intelligent government, if we are capable of rendering such.

"We arrived in New York on March 29, a few days after the last zero weather and, as usual, the Goddess of Liberty was a very welcome sight. I have always thought that after one has been away, the Goddess of Liberty strikes one as being the best looking girl one has seen on the trip.

"At present we are trying to rescue some of our plants in Duxbury which certainly had a hard winter, and we are trying to save as many of them as possible."

Harry D. Rawson died following a heart attack at his home in Des Moines on February 14, having been ill for only a brief period of ten days subsequent to a trip to Washington, where he had been in conference as consulting architect for the projected addition to the Des Moines Post Office building. As a member of the firm of Proudfoot, Rawson, Brooks and

Borg, Harry had held a major position in Des Moines architecture. Among his notable buildings were the Iowa-Des Moines National Bank and Trust Company's building, the Equitable building, the Des Moines building, the Hotel Fort Des Moines, Register and Tribune building, the Y.M.C.A., and the Liberty building. He also designed the Memorial Union building at Ames, Iowa, the University Hospital at Iowa City, and numerous fraternity houses.

After his graduation he made a bicycle tour of Europe. From 1896 to 1898 he was Superintendent with J. L. Silsbee, Architect, in Chicago. In 1898 he was a member of the firm of Hallett and Rawson, Architects, which continued ten years, when it became Proudfoot, Bird and Rawson, and has undergone some other changes down to the present time.

His main interest was his work, which may have been said to have been his hobby, although at one time he was interested in golf, until his physician ordered him not to play on account of his heart.

He was born September 1, 1872, in Des Moines, son of Mr. and Mrs. A. Y. Rawson, pioneer residents of the city. He attended Grinnell College for two years before coming to Technology. On October 1, 1902, he married Miss Louise Gilmore of Des Moines, who survives him, together with a son, Gilmore Rawson, of New York City, and a daughter, Mrs. Mary Scott Rollins, of Des Moines.

During the World War he was successively lieutenant, major, and lieutenant-colonel. His work was almost entirely in Washington on the job of planning construction of army cantonments and munitions buildings. He was a member of the American Legion. — CHARLES E. LOCKE, Secretary, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

1899

The roster of members sent some weeks ago to every member of the Class of '99 whose correct address was in my files has perhaps not been as popular as "Horses and Apples" by Bassett, nor "Anthony Adverse," but it has brought me compliments, condolences, and changes of address. The latter, along with corrections, are always welcomed, as a correct mailing list keeps one in the good graces of the postal authorities.

L. H. Turner is back in the fold. He joined the ranks of "missing men" some time ago when his mail was returned to my office mutilated and defaced and copiously stamped with the red hands of the postal service. C. A. Smith, of Atlanta, informed me that Turner was living at 625 Sherwood Road, N. E., Atlanta, Ga. He also hinted that the M.I.T. Club of that city was active and one of their most interesting features is Bake Bean Dinners held at the homes of the several members.

Hervey Skinner set me straight on several addresses, and James Dryer, Rochester, corrected his own. Every little helps and it is hoped that others will read

1899 *Continued*

the list, note its errors and omissions, and give me the right dope whenever possible.

Several helpful suggestions about the reunion we are not going to have this year reached my desk. I am filing them for reference, and hope to use them next year. It might be well for each and every one of us to think and ponder on the said reunion for 1935, and we can consider it in the early winter.

Norman Seavey wrote me from Florida in mid April. Summer finds him in New Hampshire, but he seems to be lucky enough to divide his time fairly equally between New England and the land of palms and sunshine.

Chester B. Hogue in Seattle writes of an extremely busy winter. His principal occupation has been wrestling with administration of the Lumberman's Code. Illness in the family has kept him busy visiting the ill when he could break away from code problems, but at his last writing the family was improving and all was going well with the code also.

The editors have plead for brevity because this last issue of the season must cover much ground. My sympathy is all with the editors and I close with greetings to all members, good wishes for a summer holiday, and prayers that enough of you will be inspired to authorship that I may have something for the first autumn issue. — W. M. CORSE, *Secretary*, 810 18th Street, N. W., Washington, D. C.

1900

A very interesting letter has come from Woodward of Birmingham. We all remember him on the baseball team; well, it's a real hobby with him now. Enclosed with the letter was a series of seven articles from the *News Age-Herald* describing his connection with the Birmingham Team of the Southern League. In 1910 he bought the club known as the Barons and has owned them ever since, capturing the pennant several years in succession. He has brought out some of the best players now in the major leagues. A full-page photo of the Old Maestro accompanied the first instalment and he looks just the same as ever.

Dave Ellis' fleet son, Richard, representing Northeastern University, turned in a fine performance at the Greater Boston Intercollegiate Meet last April to win the 800-meter race against some of the best local college runners. Watch this boy.

The Washington (D. C.) *Herald* recently carried an article with an artist's drawing of a proposed three-million-dollar apartment development for Government employees at Arlington Ridge, Va., overlooking the Potomac Valley, presented by Henry C. Morris, now in the real estate business in Virginia. The project calls for a group of modern apartment buildings containing suites of two to five rooms each with an average rental of \$9 per room per month on about 75 acres of land owned by Morris; the buildings to occupy 20% of the acreage and the balance to be developed into parks, gardens,

playgrounds, tennis courts, pool, and ball fields. Morris, in a letter recently received, is very enthusiastic over the plan and incidentally sends regards to all.

We are all shocked to hear of the death of Russell Priest on March 12 after a lingering illness of six months. He was with Charles H. Tenney and Company of Boston, in charge of their Department of Safety.

Professor Henry V. Hubbard, Chairman of the Council of the Harvard School of City Planning, has been elected a Trustee of the American Academy in Rome to succeed the late Ferruccio Vitale. Professor Hubbard is President of the American Society of Landscape Architects, member of the National Capital Park and Planning Commission, and of the board of directors of the National Conference on City Planning. He is editor of *City Planning* and *Landscape Architecture*, and was recently appointed consultant on regional planning to the Tennessee Valley authority.

We are all glad to know that Canon George C. Gibbs is now back in this country with an address in New Bedford. — Maxfield, from Philadelphia, sends an interesting letter about his various problems in the manufacture, sales, and engineering of package machinery. He has a daughter in the first year at Drexel Institute and his son (Penn., 1932) has just been married. He ends by sending best wishes to all the class.

It looks as if the next Annual Alumni Dinner would be a chance for this class to show its loyalty to the next alumni President, none other than our own Charlie Smith, Vice President of the New Haven Railroad. Let's all make reservations now and have the dinner a rousing one for 1900. We ought to have three tables at least as it will be some occasion.

Word from Flanders in Springfield has it that the recently formed firm of Handy-Flanders Company is getting along nicely. More power to it, say we. — Allen, Neall, Harry Osgood, and Graf have been doing good work with the CWA this last period. — Last fall Patch, Chairman of the Massachusetts Council of Baptist Men, was presiding officer of the Retreat for Laymen held at the Newton Theological School on Newton Hill. — Word from Mott-Smith gives us the high lights of his latest contribution to Science named "Heat and Its Workings," published by Appleton and Company, also that "The Story of Energy" is on the way.

The ladies of the Class are not to be outdone in the matter of news and in a later issue their nice letters will appear. They come from Margaret Stannard, Ethel Fifield Brooks, and Jane Bartlett. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

Rumors from Vladivostok, Singapore, and all European capitals have more recently been confirmed by Arthur G. Hayden from the Bronx. A gathering of the *cognoscenti* was held in New York City at the hour of high noon. There were pres-

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ent: Harry Chalmers, Asher Weil, Charles G. Tufts, Paul G. Hilken, William E. Farnham, Henry W. Chambers, and the scribe, Arthur G. Hayden, as noted above. Among the absent were noted Bob Derby, Harry Allen, Robert Brown, while Everett Pendleton wrote as follows: "Sorry I cannot be with you, but shall be helping my father celebrate his 86th birthday with four generations present. Hope to see you next time."

If my interpretation be correct, this places Everett as a grandfather though, of course, it is possible that it is one of his siblings who has demonstrated a laudable fecundity. The time is approaching when I think it might be amusing to take the census of the grandchildren, not of the Class of 1901 but of the individual members thereof. There is a nice subtlety in this which I trust will appeal to the less regenerate of the brethren.

In my mail this morning I found a letter bearing a stamp of Palestine — the boy philatelist again — and within a letter from Fred Clapp, a part of which I excerpt for your delectation: "Palestine is having a 'new deal' of a different sort. The Zionist movement is in full swing and with it a widespread boom. One can stroll out any afternoon and see 50 or more houses under construction. Jerusalem is growing rapidly and Tel Aviv (the largest city in this country) has grown from a desert to a population stated as 100,000 in the short space of 25 years. This is the one country to which Hitlerism may be said to have done some good, for a large number of the Jews who were thrown out of Germany have settled here; American Jews have come also with their money, so that Palestine may be the most prosperous country in the world at the present time.

"It is my business, of course, to notice these conditions in my capacity of specialist on the Near and Middle East. The limits of these last-mentioned two regions would be hard to define; but the fact remains that business seems to be relatively good and constructive conditions prevalent all the way from Haifa to Teheran and from Moscow to Bagdad. While the West is apparently standing still (or even drifting backward) the East is forging ahead — partly due to far-sighted rulers like Stalin, Mustapha Kemal, and Reza Shah Pahlevi; but, in Palestine, due in large measure to money that has been pouring in from the outside. You may be surprised to learn that right here in this ancient city is the finest and most expensive Y.M.C.A. building in the world — built with American money and largely equipped with American products."

It seems to me that there is much food for thought in these observations. There must be a certain amusement to many of us in this part of the world who are inundated by the floods of inspired writing from Europe's noble experiment to have Stalin casually — and most naturally — referred to as a ruler. There is also a touch of whimsy in the thought that Jerusalem, seeming well named the golden, should have the most expensive Y.M.C.A.

1901 Continued

building in the world. One could elaborate on these thoughts; however, it may be enough to note that alphabetical maladjustments are apparently not as yet inflicted on this country of the blessed.

Having dealt with world affairs vicariously, let us turn more definitely to our own small parochial concerns. A canvass of the faithful — how the Oriental idiom interpenetrates — has made it patent even to your reluctant Secretary that this year was not the year for the postponed reunion. So with a very real regret we place the project back upon the table from which we were prepared to lift it. By next year, by cabal and cabalistic symbol, recovery will either have resolved itself into the dire failure that many of us fear it may prove or will have triumphantly vindicated a program of ruthlessness. Further, there is the possibility that during the year the Class may become unionized — up to the present we have only been united — and thus as a collective group begin to share the benefits of the financial readjustments in which up to now we have been but involuntary contributors. By a minor tautological rearrangement, a new entity, we hope, will come into being to be designated the RFA — Reunions For All, for the benefit of the uninitiate — and through the agency of this governmental activity we may be given three days at Wianno or some similar salubrious spot. The Washington members of the class are at work on this and Allen McDaniel holds out hope of a successful outcome to their endeavors. All of this to inform you by trope and metaphor that there will be no formal class reunion in June of 1934 but that we may have one in 1935 and shall certainly plan for 1936. So in the pithy slang with which my vocabulary has been enriched since my later contacts with Fred Clapp, I greet you — Selah. — ALLAN WINTER ROWE, *Secretary*, 4 Newbury Street, Boston, Mass.

1903

The Secretary is indebted to Professor Locke, Alumni Secretary, for several notes of class members. Porter and F. B. Jewett have been mentioned in the newspapers for work in connection with their memberships on "alphabetical" government commissions. The New York *Sun* referred to Potter as being a "prolific writer on both technical and educational subjects," adding, "he blue prints a bridge between the mechanical man and the human man."

Loughlin, in charge of the Section of Metallurgical Deposits in the U. S. Geological Survey, has been in charge of surveys and reported on the feasibility of constructing a drainage tunnel in the Cripple Creek District of Colorado, and spent several weeks on the ground. The plan is to drive a tunnel, using the funds loaned by the Federal Government.

Manahan, who has been in the East for a long period, has now gone to Texas and is making his headquarters at 112 Mills Building, El Paso. — Haddock was reelected Vice-President of the Wor-

cester Gas Light Company at its annual meeting recently. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 89 Broad Street, Boston, Mass.

1905

The Sub-Secretary for the Alumni Dinner turns out to have been Prince Crowell, X, who made his report on March 27: "I am in receipt of your urgent request sent 'special' on February 19, and my prompt reply is as follows: I went to the Tech Banquet February 17, 1934, my mind all set for a call down from our Secretary and regretted that he was not there to give me the proper and deserved treatment. I did not forget him, however, and when the cigars were passed around I took one for him and enclose it herewith (Pretty dry. R. D.)."

"I regret to say that none of the other rough necks were there, with the exception of Henry Buff — Marcy, Fuller, and Hawkes being absent. I had to behave myself for once as I sat between two of the learned, Professors Henry Keith and Irving Cowdrey. The first thing Doc Lewis, X, said when he saw me was: 'I have solved your problem, Crowell,' so for once in his life a Tech professor has solved a problem in record time, it being only about two years since I gave it to him."

Among those present: C. E. Atwood, Bixby, Buff, Cowdrey, Crowell, Keith, Lewis, R. Lord, McLean, Prescott, Smart, Wentworth.

In the Boston *Globe* of March 10: "Robert H. W. Lord, X, President of the Lord Tanning Company, Woburn, spoke last night at the 275th meeting of the Northeastern Section of the American Chemical Society in the American Academy of Arts and Sciences Auditorium, Newbury Street.

"Discussing 'Recent Advances in the Application of Chemistry to Leather Manufacturers,' Lord, who has been working on chemical problems ever since his graduation in 1905, presented a new point of view in the chemical end of leather processing. Motion pictures and slides depicting leather production were shown."

John Damon, VI, doesn't understand why Wallace MacBriar, II, of Carnation Milk should be located in a building used exclusively by the Milwaukee Gas Light Company. John is now settled at 2115 Van Hise Avenue, Madison, Wis. — Your Secretary had the pleasure of entertaining Dean Tryon (see organization diagram in May Technology Review) when he made a visit to Wesleyan in March. — From a reliable source it is learned that Bunny Loomis, VI, is doing a fine job as purchasing agent of the City of Boston.

William A. Hall, XIII, remembered as the player of the silver euphonium in that remarkable '05 freshman band which had so few other musicians but made so much noise, writes from the Navy Yard, Charleston, S. C.: "It is very nice of you to write me from time to time because it brings back a very enjoyable period of my

life while I was at M.I.T. I am very much afraid that I will be unable to play any horn now. I tried it several times after I entered the Naval Academy and found my lip was so flabby I was almost unable to make a sound. Since then I have not attempted it.

"My travels since I last wrote have been no more extensive than usual. My wife and I came back from Brazil through the Straits of Magellan and up the west coast of South America in 1931. It was an exceedingly interesting trip and I took it almost to a day at the same time of the year that the Fleet went through the Straits in 1908. We also visited the Falkland Islands. This is a rather out of the way place since the Panama Canal opened. When we arrived at Panama I took command of the Hospital Ship *Relief* and followed the Fleet up and down the west coast of the United States for about a year and a half. I was relieved from that duty in the summer of 1932 and motored across the continent with my family to Charleston, where I now am. I expect I will go to sea again next summer, on what or where I have no idea at the present time.

"I might add that my present job is Captain of the Yard at the Navy Yard with additional duty as Chief of Staff of the three naval districts — 6th, 7th, and 8th — whose headquarters are here in Charleston."

Wonder whether the Captain remembers the review in South Armory at which the third trombone filled his horn with water and released it opposite the stand, dribbling along the floor for a hundred yards and putting out of commission every instrument in the band except the drums. Probably he escaped the guard house only because the band was just a little worse than usual.

Alden Gilson, II, played — was it the bass horn? Still in the printing business and living in Wellesley Hills, he writes: "I think of you every time I hear 'Under the Double Eagle' played, as it always recalls to me how you liked to play that tune.

"I haven't much of interest in the way of news. Have been in the printing business since 1912, and for the past two years it has been 'tuff,' and no fooling. And no signs of improvement either.

"I am married, have a daughter in Connecticut College, a son in Junior High School. He plays the saxophone, so you see making bad noises runs in the family. I played one year in the Harvard Band and haven't tooted since."

On May 1, George Jones, II, became a partner in the firm of Dyrenforth, Lee Chritton and Wiles, 141 West Jackson Boulevard, Chicago. — Jim Barnes, VI, has a Detroit address, 700 Longfellow Avenue. — Bill Tufts, I, wrote from Huntsville, Ala., in February: "The South is certainly improving. I can see a marked change from a year ago." — John Eadie, VI, is now located on the Isle of Man. — Fred Abbott, VI, has a boy in the freshman class at the Institute.

After ten years' silence, Ralph Tarbett, XI, writes from Washington: "You appear to have an uncanny way of writing

1905 Continued

me just before I receive official orders transferring my activities to some other part of the country. Perhaps in this case I can break the spell by answering your letter without committing myself too much.

"Charlie Johnston, III, and I are living in the same section of the city so we occasionally see each other but not as often as I think we should.

"I am afraid that I am not such a good alumnus as you so delicately intimate. However, I do keep somewhat in touch with the Institute since I am on the Visiting Committee for the Department of Biology and Public Health.

"As you probably know I have been with the U. S. Public Health Service since 1913 which is as long as that organization has had engineers and I presume that I will stay with it until I reach retirement age if nothing happens before that time.

"Ten years ago I was busy setting up the first line of defense against the possible introduction of yellow fever along the Texas-Mexican border. Naturally this had primarily to do with control of production of *Aedes aegypti*, in plain English the yellow fever-carrying mosquito. Interesting work and an interesting section of the country.

"Following the rather widely spread outbreak of typhoid fever in the winter of 1924-25, attributable to shellfish, I was ordered east on shellfish sanitation work at Norfolk, Va. In 1928 I was detailed to the Bureau in Washington as Chief of the newly formed Engineering Section and have been here since that time. How long I stay depends upon the powers that be."

The citizens of Missoula, Mont., were so interested in helping President Charlie Clapp, III, get a Union building for his State University that they went to the legislature and saw that the necessary funds were secured for the PWA program.

From Ralph Segar, VI, in Westerly, R. I., who wrote in March: "About the middle of February, 1933, something busted inside of me and I dropped at the count of nine. They were not quite able to count to 10 because I was on my feet before the final bell tolled me out. However, it was a hard enough rap to put me in bed for 22 weeks and then after an interim of about three weeks I was allowed to sit up ten minutes a day. I finally got to the point where I could walk across the room.

"Thinking that I had not had enough, they dropped me again with an attack of gall bladder which put me back on my downy couch for another four weeks. I finally was successful in avoiding an operation so somewhere around October and November I seemed to have gathered enough strength and energy to go down to the office and see what was left of the Whitall Electric Company.

"I was pleased to find everything intact and things going along as well as they could under the very trying conditions of business, and so from that time until now little by little I have been putting more time in at the office and getting

a little business until now I stay here most of the day through. The trouble in the first place was a very severe heart attack coming some two or three weeks after I was told I had a good heart."

Ed Burkhardt, XIII, sounded very sleepy when your Secretary telephoned early one morning in the Easter vacation to inform son Roger that his fraternity house was on fire. Roger, who was head of the house, had to drive right down.

From Charlie Boggs, V, Simplex Wire and Cable Company, Cambridge: "You probably do not realize that besides trying to do our regular business we have added work due to the NRA. Although the NRA is benefiting our industry, it certainly means at the present time added work for the executives.

"I did take the opportunity last summer to go out to Chicago, and took a very short look at the Exposition while I was attending the American Chemical Society Meeting. I got in touch with Frank Payne, XIII, and spent a very enjoyable afternoon and evening with him and his family.

"I imagine that my sailing days are also essentially over. However, I sailed in the New York Yacht Club Cruise in '32 on *Grenadier*, and besides having a very pleasant time, also had the joy of crossing the line first in four out of five races, and always finishing among the first."

In the midst of a very hectic discussion of compulsory chapel at Wesleyan, Andy Fisher's, X, young friend here asked your Secretary whether, in our time, there was chapel at Tech. The answer was yes and that Andy would furnish the details.

Ben Lindsly, III, wrote from Bartlesville, Okla., in March: "Probably the most important news that I have to offer relates to a new addition to the family. This time, however, our new daughter came fully clothed, and old enough to vote. Formerly she was Miss Martha Brown, Muskogee, Okla.; now, Mrs. Robert R. Lindsly, Borger, Texas. That makes two Marthas in the family. One in the oil fields, and the other in dear old Boston, where she attends Vesper George Art School and also conducts riding classes at the Revere Riding Academy, Concord, Mass. — a trick she learned during her undergraduate course at University of Oklahoma.

"Early in September I enjoyed the hospitality of Frank Payne, XIII, at the University Club, Chicago — score one for me — I was the only '05 man to show up at that particular reunion. With the exception of about 30 pounds additional avoirdupois and an occasional gray hair, Frank is the same as when he played end on the famous '05 football team. It was a treat to see this old classmate. Such experiences have been rare with me. I would have known Frank anywhere.

"But as for Doc Lewis, X, he slapped me on the back at the API banquet a month later at Dallas, Texas, and for some unknown reason, it took me half an hour to figure out who he was. He wasn't changed much either — like a Chevrolet however, bigger and more beautiful all the time. Probably that's what threw

me off. Our visit was pleasant, but all too short. Later, with many others, I enjoyed his talk on the properties and behavior of complex hydrocarbon mixtures under various conditions of temperature and pressure. It was the best talk I ever heard on the subject, and this opinion seemed to be general.

"I note reference in the January Review to my temporary field laboratory in the Oklahoma City Oil field. Naturally curious, I wonder where you got this 'news.' I was there nearly a year, but returned in January to headquarters, where I will spend a few months analyzing my data and writing up the results from samples obtained 1½ miles underground, and at pressures in excess of 2,800 pounds per square inch. For no good reason whatsoever, because I don't expect you to read them, I am enclosing copies of my two latest publications." (Not yet read. R. D.)

Captain Bob Beard, I, who used to be in the army, now has an address in the Navy Building, Washington, from which he broadcasts no news. — Percy Hill's, II, son, after a year at M.I.T., is now at Brooklyn Polytech. — Bill Lalley, I, had a big fight with his stockholders in March but won the proxy battle and remained President of the Kelly-Springfield Tire Company. — Carl Houck, I, has a new address, 31 Woodward Avenue, Kenmore, N. Y., but no news.

Fred Bennett, I, Mineola, N. Y., says: "Since Bert Files, I, left New York, Fouhy, I, became a C.P.A., Lawyer Gabriel, I, got married, and no more New York Tech dinners, I haven't had much association with the '05 boys. But I still go to the office even if PWA and CWA are doing what little municipal engineering we might otherwise have had. I am well and happy, still have the best wife I know of, a comfortable home, few worries, and a sincere wish that we can all get together for our 30th anniversary at the next five-year reunion."

Dick Senger, III, says: "I ride 'em cowboy, as they say out here. Work isn't a hobby but it takes up a lot of valuable time. Nevertheless, I get a chance to do some horseback riding all the year around, some gardening, mountain climbing, and swimming in summer. Golf? Wish I could but can't get interested. You can also overlook this heresy if you wish.

"It's a long time since I've seen any of the classmates. We are all getting so old I doubt if many of us would recognize each other on the street.

"Garfield is only a little way out of Salt Lake City and I wish any of the classmates visiting Salt Lake would give me a ring — Garfield 200." — ROSWELL DAVIS, Secretary, Wes Station, Middletown, Conn. SIDNEY T. STRICKLAND, Assistant Secretary, 20 Newbury Street, Boston, Mass.

1907

At a meeting of the National Association of Fan Manufacturers held in Detroit in April, John Frank of our class, who is President of the Ilg Electric Ventilating Company of Chicago, was elected Presi-

1907 Continued

dent. John was also chosen as one of six men who constitute the permanent code authority for the fan industry.

In February the Secretary received a memorandum from the Alumni Office giving the address of James M. Gaylord as 1226 Wentworth Avenue, Pasadena, Calif. Not having heard from Gaylord for many years, the Secretary wrote to him requesting information, with the result that early in May the following letter was received, written on the letterhead of The Metropolitan Water District of Southern California, 306 West Third Street, Los Angeles: "Twenty-seven years of engineering work is a lot to cover in one letter but I will be brief. Seventeen years with the U. S. Reclamation Service, eight years with the Southern California Edison Company, and four on the Colorado River Aqueduct. If that adds up to more than 27 years, it is because the last two assignments overlapped.

The first two jobs were extremely interesting and I enjoyed them more than I can tell, but the last is an undertaking that inspires the imagination and drives one on to outdo everything that has gone before. Fifteen hundred cubic feet of water per second is to be taken from the Colorado River 150 miles below Boulder Dam, and carried 240 miles across mountains and desert to supply Southern California cities.

"My part of the work is the design and construction of the aqueduct pumping system which ultimately will require over 300,000 kw. of power from Boulder Dam. Construction has been under way nearly 18 months and rapid progress is being made.

"At the beginning of the work last year we were extremely busy equipping the 240 miles of construction work with power, water, gas, and telephone service. Now we are planning the permanent pumping works which are to be built toward the end of the construction program, probably in 1937 and 1938.

"There are several Tech men in my department: Sharp '10, Farmer '22, Kerr '09, Levinton '31, Mabel Macferran '25, Van de Water '33, almost a brain trust, but they are all good at making water run up hill.

"To one living in a country blessed with ample rainfall this may all seem like just another California pipe dream. But this is going to be a real pipe and it is rapidly becoming a reality and not a dream. To me it also is proof positive that a big job can be done honestly and efficiently by a public body, and I'll defend that statement against the world. Thanks for your cordial letter of March 19th."

In the April 20, 1934, copy of Colorado River Aqueduct News, a bi-monthly publication in the interest of field and office workers on this aqueduct project, that Gaylord sent us, it appears that he is chief electrical engineer of this work. He also is to be in charge of some laboratory studies to be made at California Institute of Technology along the lines indicated by the following article clipped

from the publication just mentioned: "Work was going forward rapidly last week on the District pump-testing laboratory, to be located in one of the buildings of California Institute of Technology, Pasadena. Already installed are the large steel tanks which form an important part of the laboratory equipment for testing the model pumps. Pressure in the tanks will create a head, relatively equal to that which will be encountered under actual conditions. The importance of the testing operations is readily appreciated, when it is pointed out by District engineers that large-sized pumps are to be found in America and Europe with efficiency varying from 80% to more than 91%.

"For each one per cent improvement in efficiency in aqueduct pumps, the District will save approximately \$50,000 annually in pumping charges. In an effort to fix definitely those things which make for higher efficiency, the District is undertaking this research, and expects to effect great economies in aqueduct operation."

Some of you may remember Stuart C. Godfrey who was with our class at Tech during our Sophomore year, and played on the class football team, leaving the Institute to go to West Point. Godfrey is a Lieutenant Colonel of Engineers in the United States Army and is now located at the Army Base in Boston. The Secretary had a telephone conversation with him early in May. His home is at 80 Madison Avenue, Newtonville, Mass. His wife has been ill with a nervous trouble for over a year but is gradually improving. He has a son at Exeter Academy, a daughter who keeps house for him, and a son in Virginia. Although his allegiance is naturally much stronger to West Point than it is to Technology or to '07, he will be delighted to hear from any '07 men either by letter, telephone, or personal call. He said he hopes to be in Boston in 1937 so that he can attend the 30th year class reunion. Here's hoping that many of our class whose class ties are presumably much stronger than Godfrey's are thinking along this same line.

In April the Secretary received a post card from W. Watters Pagon saying: "You may be interested in a paper of mine in *Engineering News-Record*, March 15, 1934, pages 348 and 362." (In passing may we say that we sincerely wish that other members of the class who have articles written by them that appear in print, either in magazine or book form, would notify us in a manner similar to this. We surely do not consider it egotism or conceit on the part of Pagon or any other man, but on the contrary, fine cooperation and good comradeship.) The Secretary investigated and found on page 348 an article entitled, "What Aerodynamics Can Teach the Civil Engineer," and on page 362 an editorial comment on our classmate's contribution to the engineering profession. Any adequate quotation from the article is impossible here, but it points out that civil engineers have shown little interest in

the design of structures to resist wind, abiding in their calculations largely on the results of tests made 75 to 100 years ago. The aerodynamics engineer, on the contrary, has been making multitudes of tests which have given him important fundamental knowledge. Pagon, as both a civil and aerodynamics engineer, is contributing this paper and others to follow, describing the application of principles learned about the effect of wind relating to the stability of structures. Pagon is a consulting engineer, located at 1308 Lexington Building, Baltimore, Md.

We have a new address for Marcellus Rambo, of Course II: Caixa Postal 780, Rio de Janeiro, Brazil, but we know nothing of his work.

In the March 16, 1934, edition of the Chicago *Herald and Examiner* appeared the following article telling of one activity of our classmate, Fred Schmidt: "Crowded conditions at the Evanston Public Library will be much relieved upon completion of an addition on which work has just been started. Architecturally the new wing, one story high and 20 by 30 feet, will correspond with the main edifice and will be built on the north side of the library building, above the boiler room. . . .

"Plans, prepared by Frederic B. Schmidt, FEWRA architect, have been approved by Mayor Charles H. Bartlett, the library board, and the Evanston art commission. Mr. Schmidt has been a resident of Evanston for 14 years and is a graduate of the M.I.T. at Boston." Fred's address is 939 Maple Avenue, Evanston, Ill.

We have news regarding two men located in Phoenix, Ariz. One is B. F. (Bennie) Carter, who is President of Vinson Carter Electric Company, 25 East Adams Street, in that city. Carter went to Phoenix in 1914 as assistant superintendent for the Pacific Gas and Electric Company, now the Central Arizona Power Company. In 1918 he went to Mesa, about 16 miles east of Phoenix, and organized Vinson Brothers and Carter, and has been engaged in handling electric appliances and electric repairs ever since. He was a member of the City Commission in Phoenix, 1929-1930. He has a wife and two boys, one eight years old, and the other 18, a junior in Phoenix High School.

The other Phoenix representative is J. E. Tresnon, whose address is 1641 Buckeye Road, in that city, just out of town, where he lives with his wife and twin boy and girl, 18 years old, born in Boston and both graduating this year from Phoenix High School. The son will go to the American University in Washington, D. C., in September. Tresnon went to Arizona in 1921 (being met the first day, incidentally, by Sam Coupal and L. R. Davis) on account of being troubled with asthma. He has secured and retained good health and is enjoying good, quiet living. During his early days in Phoenix, he did office work, but now is electric system operator for the Salt River Valley Water Users Association.

1907 Continued

In the May issue of The Review we promised to give in this issue a list of sons of '07 men who are Technology graduates. We spent some two hours in the Alumni Office examining the files, and so far as we can determine, the only men who qualify are Richard C. Ashenden, class of 1931, son of Dick Ashenden, and Horace Irving Crane, 1933, who was mentioned in the May issue, inasmuch as he is still a student at the Institute. Of course by the time you are reading this some of the men named in the previous issue will have joined the ranks of the alumni. If any reader knows of any other "junior '07" men, the Secretary will appreciate being notified so that he can make correction in the next Review.

Two addresses have recently been received for men who have been "lost" as far as the Secretary is concerned for some time: Robert K. Taylor, 137 Park Avenue, Tuckahoe, N. Y., and William H. Martin, Public Works Administration, Interior Building, Washington, D. C. Also Captain Harold S. Wilkins, U. S. A., is at Augusta Arsenal, Augusta, Ga., and Antoine G. Labbe is at 2941 N. W. Quimby Street, Portland, Ore. We will try to have more complete news regarding these men in the October Review. — BRYANT NICHOLS, *Secretary*, 12 Newland Street, Auburndale, Mass. HAROLD S. WILKINSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

The details of our Twenty-Fifth Year Reunion will be given in the first fall number of The Review. At the time these notes are being written, the big event is still a month away but, already, returns to our first notice indicate a widespread interest and the probability of a large attendance.

On the back of his reply card, Chill Sharp sends the following from Los Angeles: "See H. J. Stiebel regularly. He is with Travelers on inspection. Also H. L. Sherman. Have spent the night with him in Balboa once or twice. He is, or has been, in Honolulu for the winter. He spends his winters in the South Seas or thereabouts and summers here in California. He is still full of health and the same good fellow. Homer Bender dropped off here for a day about two months ago."

The spring luncheon meeting of the New York crowd took place on April 7 with ten men in attendance. Paul Wiswall, who has charge of these affairs, writes: "I think I get more satisfaction from these semi-annual luncheons the longer we keep them up. Harold Ballard came for the first time in what I suppose must be years! Colonel Carter was there, too. His presence always insures a good time. Carter was in his usual good form. He told us he was now Dean of the Corps of Cadets at the U. S. Military Academy, as well as Professor of Natural and Experimental Philosophy which, by his own interpretation, is Physics. He has two sons in the service, both far from home, one in the Philippines and the other in Hawaii.

"Carter has asked the Class to be his guests at West Point for lunch this spring and after consulting the Weather Bureau and the almanac, I have told him we'd come on Saturday, May 26. I wanted a day without rain, of course, and while Dr. Scarr cannot promise us a good day, he sent me a prediction for that day that would warm the heart of any Tech man and would have made Charles Cross smile with joy. Carter wants us to come 40 strong and spend the afternoon enjoying the beauties of that lovely place on the Hudson. There will be a review of the Corps at one P.M. and there are to be tennis and lacrosse games in the afternoon."

Subsequently, Paul wrote: "There were 14 of us who went to West Point yesterday as guests of Colonel Carter and with the ladies of our families we numbered 28. Carter also asked several of his brother-officers and their wives to entertain us. I do not think any of us had met Mrs. Carter or been in their home on the Reservation but today I think we can all say that we shall have a very green place in our memories for the Colonel and his charming wife.

"Carter lives in one of those old stone-and-brick houses just west of the Monument. The house is something like 100 years old. You stand on his porch and look straight up the Hudson at the most beautiful place on the river with Storm King on the west and Mt. Taurus on the east.

"After a delicious buffet lunch, many of us tasting 'spoon bread' for the first time, we saw a review of the whole Corps of Cadets. . . .

"Army and Navy played their annual lacrosse game later in the afternoon. Things did not turn out so well for Army. . . . Navy won by one goal. Most of us started back to town after the game and all of us are indebted to the Carters for a delightful day together.

"Henry Marshall and Austin Keables were at Carter's with their wives. I do not think I have seen either one since graduation. Austin lives in Beacon, a few miles north of the Point and Henry lives in New Brunswick and is with Carrier Engineering Company. John Mills and his wife were there also. The rest were the Old Guard.

"George Palmer is no longer with the American Child Health Association but is now with the City of New York in the Health Department. George tells me he is so busy he hardly knows where to turn; but he is very well satisfied in his new work. — Claude T. Wilson was recently elected a Governor of the Tech Club of New York. He now lives in Mt. Vernon." — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, General Foods Corporation, 250 Park Avenue, New York, N. Y. MAURICE R. SCHARFF, *Assistant Secretary*, Main and Company, 1 Wall Street, New York, N. Y.

1910

The editor requests brevity, so here are the letters with no comments. From Horace V. S. Taylor: "I have just got

back from a six months' trip (17,000-mile drive) through every one of the 48 states, plus Canada and Mexico. All the men I asked reported better conditions, with one exception. He saw no improvement; said he was on his day off from guard at the penitentiary, and he was drunk. Never realized before what a big country the U. S. is. But the scenery in the West is very much diluted with desert. It costs a great deal less to live in the West and I advise anyone with half a chance to pay it a visit."

From Francis B. Silsbee: "They say that a drowning man sees his entire past life flash past as he sinks. Your letter has overwhelmed me with a wave of embarrassment with the following rather similar result: After leaving the Institute in 1911, I got a job in the electrical division of the Bureau of Standards at Washington, where I have stuck ever since; except for a year (1914-1915) at Harvard, where I succeeded in bluffing a Ph.D. out of the Physics Department. The Bureau of Standards is a somewhat lonely oasis of technically trained idealists, entirely surrounded by a desert of politicians and red-tape artists. It is, however, sufficiently isolated geographically and otherwise to offer an opportunity for genuine public service in preaching the gospel of accuracy, justice, and engineering common sense, unhampered by commercial or advertising departments. The need for keeping one jump ahead in the development of methods of measurement, the occasional opportunity for genuine research work in the interests of routine testing, and answering the fool questions written in by Mr. Taxpayer keeps one from getting too stale.

"In 1921 I married a chemical colleague, Clara Gillis (Radcliffe '16) of Butte, Mont., who is now very busy feeding vitamins, and so forth, to Henry, aged 11, Frances, aged 8, and Robert, aged 5. Our favorite diversion, indulged in about once in three years is to park the children with the grandparents in Butte and then head for the high spots of the Canadian Rockies. Hope we shall meet Dean Peabody on the summit of one some day. Any of the class having time to kill in Washington and interested in seeing our laboratories should give us a ring."

From Howard M. Trueblood: "I am now with the Bell Telephone Laboratories, Inc., instead of the A. T. & T. Co., the Development and Research Department of the latter having been consolidated with the former on March 1 of this year. This change of status I share with many other M. I. T. men, undoubtedly. It has involved no change in my work, which continues to be concerned with the technical side of the peaceable coexistence of telephone lines and power lines; in other words, inductive coordination. The research end of this game has not been especially slack, even during the depression, and the business is picking up some along with the general recrudescence; that is, I have been fairly busy all along, and it looks as though I might be getting busier. I have lately had to learn some electrical engineering, having been

1910 Continued

invited to act as an Honors Examiner at Swarthmore College this month. It isn't any easier—electrical engineering, I mean, and the learning of it—than it used to be."

From Hale Sutherland: "The date of my last report of activity may have been pre-war, but 11 years of service on the M.I.T. civil engineering staff brought me so much in contact with '10 friends that letters were hardly needed. In 1930 Lehigh repeated and I followed the example of F. P. McKibben '94, in going to that institution as Head of their Department of Civil Engineering, which information gives my present whereabouts and activities. Bethlehem and Lehigh are very pleasant, friendly social groups, which makes living and working here very satisfactory. You may get a pretty good idea of the work of the department by watching the columns of the *Engineering News-Record*, where our materials research is reported on from time to time, particularly the issue of February 15, where Professor Lyse outlines our current program. We are inaugurating a new curriculum in sanitary engineering next year, and if any son of 1910 or other can't go as far East as Boston for that training, may I recommend Bethlehem, Pa. (If I said I recommended our brand of sanitary engineering above M.I.T., perhaps Dudley would not give me this little free advertising, so I shall make no comparisons.) One of the pleasant continuing associations which make life pleasing is one started in 1926, when the Sutherlands packed up and went to Istanbul for a year of professing at Robert College, and a following summer on the Continent, chiefly in Germany. At Nuremberg, in 1927, we happened to run across the Nazi annual convention. That slight contact with Hitlerism would lead me to suggest that all we read may not be true. The Germans that summer proved themselves very fine and friendly folk. I doubt whether they have changed much in seven years. The same holds for longer periods of time and I am by no means so convinced of certain myths of the Great War as I was when in uniform in 1917-1919. One evidence of a change in those matters is my present membership in the Society of Friends, dating from 1927. If any of you want to discuss these or other matters, come on around. The latch-string is out."

From George Smith Thomas: "It is graduating time again, this time for our eldest daughter, Jean M. Thomas, from Northwestern University, Evanston, Ill. The second, Priscilla L. Thomas, completes sophomore year at the same place. Your correspondent is still living at Carroll, Iowa, and still with the Green Bay Lumber Company. Best wishes to classmates."

Excerpt from article in Newark, N. J., *Evening News*: "Joseph P. Maxfield, of 83 Jefferson Avenue, Maplewood, an acoustical engineer employed by Electrical Research Products, subsidiary of Western Electric, has used modern methods of illumination in staging 'Hi Ho,' second annual minstrel show of the Wyoming

Club and Wyoming Church of Millburn, to be presented at Millburn High School. Maxfield first came in contact with the mysteries of stage lighting when he was working for Roxy during that genial showman's tenure as head man at the Capitol Theater in New York. At that time he aided in providing sound effects for broadcasts.

"He found time to investigate the unusual color combinations Roxy was able to obtain and learned the director's first maxim—always try lights first at their utmost brilliance. In this way it can easily be determined which colors clash, a factor which might escape the eye if the lights are dimmed.

"Maxfield is a fellow of the American Physical Society and belongs to the American Institute of Electrical Engineers, the Acoustical Society of America, and is a licensed engineer in New York. The Maplewood man was first led into experiments with lighting through an early interest in photography and experiments in college dealing with pure rather than pigment light. 'Pure lighting is coming into more widespread use,' he says, and should soon supersede the other type. It has been in use among physicists since 1914. . . ." — DUDLEY CLAPP, *Secretary*, 40 Water Street, East Cambridge, Mass.

1911

After six-and-a-half months of enjoyable and advantageous promotional work on the staff of the St. Moritz-on-the-Park in New York City, your Secretary is back at Douglas Hill Inn typing these notes on the 23rd of May, and, looking out of the window here toward the apple orchards. It is distressing to see how few of the trees have blossomed this spring. All through southwestern Maine the severe winter has blighted hundreds of apple trees. Just a month from now we plan to open for our fifth season and Mrs. Denison and the children, who have wintered in Yarmouth, are now week-ending it here, and in early June will be here for the summer season. Come up and see us some time!

Harry Letton, XI, died in late March in a hospital in Chicago, whither he had gone from Lincoln, Neb., for treatment for a heart ailment. Prior to returning to his native Nebraska in 1919, Harry, who was 47 years old at death, was a sanitary engineer for the City of Providence, with the New Jersey Board of Health, and the United States Public Health Service.

Alec Yereance, I, who has been transferred to Boston in the Mortgage Division, Prudential Life Insurance Company, and with his family is living at 49 Lincoln Street, Belmont, writes interestingly as follows: "The meeting on April 11 of the Boston Post, Society of American Military Engineers, in the Grill Room of Walker Memorial, developed into a miniature 1911 Reunion. Lieutenant-Colonel T. B. Parker and Captain A. W. Yereance met for the first time since they were under fire on the Western Front during the World War. Major C. G. Richmond and Captain Yereance had

last met when ushered to the same dinner table at the Keystone Athletic Club in Pittsburgh years ago. Ensign Austin K. Wardwell completed the 1911 list."

Still gaining particular prominence in architecture in the Metropolitan Area, Ralph Walker, IV, in late April was chairman of one of Mayor LaGuardia's subcommittees of his Committee on City Planning. Walker, who is now President of the New York Chapter, American Institute of Architects, heads the subcommittee on Building and Zoning. — Over in Boston J. A. Proctor, who was with us for a short time in our freshman year, has been elected chairman of the board and President of the reorganized Fada Radio and Electric Corporation. Proctor has been interested in "wireless" ever since 1908 and among his many patents are the radio marine direction finder and radio compass, installed on ocean liners and navy vessels. He also built the first wireless set to go into the original dirigible *Akron*, which was designed in 1911 to cross the Atlantic.

In mid-April on a trip to Boston I saw Thorne Wheeler, X, at the annual get-together of the New England Association of Beta Theta Pi at the University Club. He is still on the staff of Arthur D. Little, Inc., in Cambridge and says he hears from time to time about or from his old side-kick, Jack Woodruff, X, who has been most successful with his own Commercial Solvents Corporation in Terre Haute, Ind. — Later in April, when in the Hub for the New England Hotel Exposition at the Copley-Plaza, I had a fine chat with Roger Loud, VI, who was in charge of the Edison household appliance exhibit there.

Over in New York on May 1, Minot Dennett, II, in the East on a business trip from Detroit, missed me at the St. Moritz on a call, but fortunately left word what train he was taking and I caught him at the Penn Station and we had a nice chat. He finds business improving in many of the lines he represents as manufacturers' agent and he says it seems good to see Detroit back on its feet after the labor troubles it has experienced earlier this year. — Henry Martin '07, who took graduate civil engineering work with us, was at the St. Moritz just before I left. He is connected with the PWA board of review in Washington and says the city is alive once more with Tech men. He still plays his mandolin and sings and says Phil Kerr, II, is with him in a group of Tech men who get together once or twice a week for sings. — From Harry Tisdale, V, I just learned that Joe Harrington, VI, is now connected with Standard Oil Company of New Jersey in New York City and he and his family are living at 52 Sprute Street, Scarsdale, N. Y. He was away on a business trip to Chicago when I heard it, so didn't see him.

Shortly after these notes appear, Frank Osborn, III, and his wife will have concluded their ten-week vacation in the States, which they spent largely in New England and New York, and be on their way back to Petrerilles, via Chanaeal, Chile, S. A.

1911 Continued

A few other address shifts, received from the Alumni office: Arthur E. Bradley, I, shifting from Detroit back to 1600 Hanna Building, Cleveland, Ohio, still with New York Life; Lloyd Cooley, X, now with Hiram Walker and Sons, Inc., Peoria, Ill.; Ike Hausman, I, returning to P. O. 416, Toledo, Ohio, from New York City, where for a time he maintained an office for his Hausman Steel Company; Theodorus Polhemus, XI, back at 18 Moreland Avenue, Newton Centre, after last being listed in Chicago; Guy True, back from Panama, and now at Box 182, Brookline, Mass.; Vic Willis, I, back in the West with D. P. Robinson and Company, Trona, Calif.

And, oh, by the way, did you notice the Goodyear tire ad, which just appeared in the newspapers with the caption "Performance Detectives" and depicting President P. W. Litchfield '96 discussing a new tire with five fellow-executives? Right in the middle of the group whom do we see? You've guessed it: B. Darrow, VI, looking young as ever. Good picture, B!

Thus we complete another volume of 1911 notes and what a happy time I have whenever the notes are composed — of course happiest when I hear most from classmates. Here's every good wish for a happy, prosperous, and healthy summer for all classmates and their families and please make a note now for right after Labor Day. That's right: Write to Dennie! — ORVILLE B. DENISON, *Secretary*, Douglas Hill Inn, Douglas Hill, Maine. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

The drought is broken! After two months when our class news fell to absolute zero, we have secured some interesting items for you. E. W. Davis, VI, of the Simplex Wire and Cable Company has been elected as Selectman of his home town, Arlington, Mass., by a plurality, said to be the largest ever given to any office there. Davis has always been active in civic work in his community and has contributed much constructive work in local affairs. The *Boston Globe* carried Davis's picture, with a full write-up of his past history. He rates as one of Arlington's town fathers. *Nation's Commerce* also carried a full account of the election.

W. R. Chandler, VI, Director of Research and Engineering, Graton and Knight Company, Worcester, Mass., is extremely active in promoting the interests of the Mechanical Power Engineering Associates. Chandler is Chairman of the Executive Committee of this association, which is devoted to the development and distribution of facts concerning the economic use of power in industry. His activities and contacts bring him frequently to the McGraw-Hill Building in New York.

H. M. Priest, I, has moved to Pittsburgh, Pa., where he is Engineer of the Railroad Research Bureau, organized last December by the United States Steel Corporation. His address is 968 Frick Annex

Building, Pittsburgh, Pa. — N. A. Hall, VI, who is personally interested in the organization known as Electro-Lift, Inc., 30 Church Street, has announced the development of a new electric hoist, totally enclosed and equipped with explosion-proof electrical equipment for use in hazardous locations such as atmospheres with gasoline, alcohol, or lacquer solvent vapors. This is said to be the first satisfactory device of its kind on the market.

R. J. Wiseman, VI, has just returned from another extended trip through the Far West. While in California, he saw William C. Lynch, II, who is with the Aluminum Company organization. — David Dasso, II, spent two months in Mexico last winter, in the interests of Sulzer Bros., Ltd., of Switzerland, whom he represents in America. Dasso's office is 50 Church Street, New York.

Just as these notes are being written, we have heard that P. L. R. Flansburg, VI, has gone to the hospital for an operation, the exact nature of which we are unable to report at this time. We hope it is not serious, and as we were told he might be laid up for two or three weeks, we feel sure that by the time you read these notes, he will be up and at 'em again.

Your Assistant Secretary finally prevailed upon to wake up and arrange a gathering for the New York members. A luncheon meeting, held at the McGraw-Hill Building, May 17, was attended as follows: E. M. Mason, VI, E. B. Moore, VI, R. J. Wiseman, VI, J. C. Freeman, VI, N. A. Hall, VI, C. B. Vaughan, II, David Dasso, II, J. I. Murray, VII, L. A. Matthews, VII, C. A. Cary, I, and D. J. McGrath, I. As usual, Course VI men predominated, but that's probably because there are more of them around this vicinity. Notes of regret were received from Eric Kebbon, Herb Hall, Ted Marceau, Henry Coddington, H. H. Brackett, W. A. Rhodes, R. W. Chandler, R. B. Brownlee, J. A. Appelquest, and Charlie Carpenter. The crowd seemed to like the idea of meeting once more, and so we'll try to be a little more regular about this after the summer vacation season is over.

Your Secretary had a very pleasant visit with C. B. Rowley, II, recently in Cleveland. Rowley has successfully combined the two diverse professions of mechanical engineer and architect. His plant engineering products and turbine generator installations rank with his private homes built in the best residential sections of the United States. Rowley designed the all-steel, baked enamel exterior house shown at the Chicago Fair last year and is now building a similar structure for the Wheeling Corrugated Corporation along the same lines. Rowley's eldest daughter, who was adopted as our class baby, is now a sophomore at Vassar. Rowley spends his odd moments at oil painting and the Cleveland Art Exhibit hung one of his works at their May exhibit of last year. He has submitted additional pictures for this year's exhibit.

Arch Eicher, I, is the proud father of a ten months' old daughter. Arch is still

with the James H. Small Construction Company, Cleveland. — A. C. Albee, I, is Chief Estimating Engineer for the Erie Railroad, located at their Cleveland office.

We sometimes wonder how many of our Class ever read these notes, for which we labor so hard to secure material. During the two months in which the Class of 1912 was conspicuous by its absence from these columns, we did not receive a single letter of protest, of comment, or of suggestion for doing something about it. If you, Gentle Reader, have any thoughts on the subject, why not write to "Shep" or "Mac". — F. J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. D. J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, 330 West 42nd Street, New York, N. Y.

1913

The only correspondence which has come across the desk of the Secretary since the last edition of class notes, has been from our eminent President, Bill Brewster. These letters were somewhat of a critical nature commenting upon (and perhaps rightly so) sins of omission and commission of the Secretary. While such letters are not always pleasant to receive, they do constitute class correspondence, and that is something. Notwithstanding, Bill manages to get up to the Institute once in a while, particularly on the day of the Alumni Council meeting. When unable to attend, Charlie Thompson substitutes for him and thus we have seen at least two classmates at intervals during the year.

We should have mentioned in earlier notes that Joe MacKinnon has been elected Acting Secretary of the Faculty for the second half of the current school year. He took over the duties of Professor Merrill, who retires this year after a very long and useful service.

Business with the Aluminum Company of America must at least be holding its own. Geof Rollason dropped into the Institute yesterday seeking two graduates from this year's graduating class to work with him at Garwood, N. J. We had only chance for a brief chat. Owing to the pressure of business and official duties, Rollason has had but little time to meet with classmates in the New York area.

We note from memoranda forwarded from the Alumni Office several changes in addresses. Halsey Elwell who has lived in Los Angeles for quite some time is now back East and living in South Weymouth. — Samuel W. Selfridge is still with the Standard Oil Company of California but is now located in Los Angeles.

Henry H. Thompson, formerly with the Westinghouse people in Pittsburgh as an electrical engineer, is now living in Washington, D. C. His present occupation is not included in the information received. — Gene N. Burrell has moved from St. Louis, Mo., to Knoxville, Tenn., and is employed by the Tennessee Valley Authority in connection with the Muscle Shoals project. — Dr. Leon W. Parsons is still with the Tide Water Oil Company

1913 Continued

but has changed his business address from the plant at Bayonne, N. J., to the office headquarters in New York City.

Major Albert Jones has been moved from the Army Barracks at Vancouver, Wash., to the Presidio of San Francisco. He is on the General Staff in the 9th Corps Area. — Samuel E. Rogers has moved from Rochester, N. Y., to Wilmington, Del. His new occupation is not designated. — Lieutenant Paul C. Warner, a graduate of Course VI, who somehow has found that profession useful as a Lieutenant of the Aviation branch of the Navy, has just been moved from Hampton Roads, Va., to the U. S. S. *Richmond*, located at Balboa in the Canal Zone.

A pleasant and prosperous summer to you all. — ARTHUR L. TOWNSEND, *Secretary*, Room 3-435, M.I.T., Cambridge, Mass.

1914

As these notes are written before our Twenty-Year Reunion, it is necessary to wait until fall to report this great event. We can, nevertheless, start doing a little boasting now. In spite of the depression, we have already an indicated attendance greater than any reunion ever held by us — and we have held some great ones. With the reunion still three weeks away we have 63 who have actually paid their cash deposits. We have never reached 60 as a total attendance at any other reunion.

Now for a few news items which have not been included in our own paper. The Fourteen Pointer. Hal Ambler will be missed from the reunion as he has attended every previous one. He is now located at Lake Charles, La., on a construction job by Stone and Webster for the Mathiesen Alkali Works and can hardly be expected to jump north for one week-end. — Professor Ed Bowler, of New Hampshire University, and President Porter Adams, of Norwich University, both will be prevented from attending because of a conflict of dates due to their respective commencement exercises.

Frank Ahern — class fire prevention expert, even under the new deal — has been at Colorado Canyon attending a fire prevention conference, but it is understood he is again back in the Capital City putting on fires — political or otherwise. — Consulting Engineer Dick Favorite, specialist on mill power plant and layout work, is one classmate in consulting work who is truly rushed. Dick has been rehabilitating plants from Maine to Ohio. — Schoolmaster Frank Somerby has been elected Vice-President of the Schoolmasters Association of New York and Vicinity.

Henry Merrill has been trying for 20 years to time his visits home from China so as to coincide with either a class or all-Technology reunion and has at last succeeded. Merrill has traveled 15,405 miles to get here and spent 47 days on the boat between Shanghai and Rotterdam, then crossed to England and spent ten days in London before sailing for New York via Cherbourg.

C. F. Thompson, manager of the Mine and Smelter Supply Company at El Paso, is watching with interest the rise in price of metals, and states that after a long, hard pull the mining industry is showing signs of real improvement. — And now we start on our third decade of graduate life! — HAROLD B. RICHMOND, *Secretary*, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, N. Y.

1915

The closing issue of our notes for what has been a good year is saddened by the sorrowful news of the death of our friend and classmate, Reginald F. Pollard, X. Reg was born in Lynn, Mass., and entered the Institute with our class after graduating from the Lynn Classical High School. As an undergraduate he was active in athletics and student activities and was well liked. After graduation he had an interesting career, which took him from the cold of Canada to the warmth of South America. He recently had been working as a chemical engineer for Brown Company at Berlin, N. H. The following letter from Doug H. McMurtrie tells the sad story about Reg:

"Your recent letter touches on an event that shocked and saddened the whole community here, for although Reg Pollard had been in Berlin only a few years, he had taken an active part in many lines of endeavor and had found a wide circle of friends. He was successful in his profession and was just entering on work of increasing responsibility, when a serious illness developed in the form of infection of the kidneys. His death was due to peritonitis, following a series of operations at the Maine General Hospital in Portland, on April 11.

"It would be very fitting to send an expression of the feelings of the class, because he was respected and admired by everyone who knew him. The letter should be addressed to his wife: Mrs. Ruth James Pollard, Riverside Drive, Berlin, N. H. There are four children, a little girl and three boys: Joan, who is nine years old; Richard, 7; Allen $5\frac{1}{2}$; and Roger $2\frac{1}{2}$ — all splendid little folks, who will be an inspiration and comfort to their mother."

We can all look back and remember Reg as a student and also recall pleasantly the loyal and active interest he showed in coming to the class reunions, where his genial spirit always made him pleasant company. It is distressing to think that we shall not see him again, but our loss is small compared to the grief of his family. I am writing them and his parents to express the sympathy and feelings of our class, and it seems best to omit any other class news this month and leave this issue as a memorial expression of our sympathy for Reg's family and our deep and lasting regard for him. — AZEL W. MACK, *Secretary*, 72 Charles Street, Malden, Mass.

1916

Jack Burbank is now manager of the Mabrand Products, Inc., located at Long Island City, N. Y. This is the Manufac-

turing Division of R. H. Macy Company. Jack was kind enough to send me the following report on the Bock Beer Festival which was staged recently by the New York '16 men. Bill Farthing was host at the party, with Tubby Rogers as guest of honor. Felix Restivo, N. B. C. artist, entertained with his accordion while I. B. MacDaniel performed at the piano. Mac is now inspector of materials of the 3rd Naval District, and, having lost no weight, looks the same as ever.

Among the others present were the following: Dick Ahearn, Bill Barrett, Burnap, Bagley, Holden, Farhi, and Bill Shakespeare.

Dick Ahern is now Code Administrator of five different Codes, among them being one for frictionless bearings and one for motor cycles. — Bill Barrett has left the NRA after a year and a half with General Johnson. He is at present enjoying a vacation at Virginia Beach and expects to go back with the Metropolitan Life Insurance Company. — Joe Fahri is with the New York Edison Company designing structural works. Joe can still talk a lot about the Turkish situation.

Jimmy Evans made everybody sad by drinking milk. However, better than that no Jimmy at all. — Steve Brophy almost came to the party. He is making remarkable progress and when I saw him a week or so ago at a cocktail party he was the same old Steve. Lots of pep and in the best of spirits. — Walter Binger has recently been appointed as deputy commissioner for the Sanitation Department, New York City. The appointment was made by Mayor LaGuardia, as Walter has been working closely with the Mayor for the past month in an investigation of the department. Walter is working on a new method of bringing added economy to the city through the generation of electricity and steam from the heat now wasted at the city incinerators.

Rusty White and his wife were involved in a serious automobile accident the latter part of March. Both of them were severely cut and Mrs. White was confined to the hospital for several days. Fortunately no serious hurts were incurred. — Bill Drummy now has charge of all repairs for the Boston School Buildings. His title is superintendent of construction. — Santy Claussen and his wife have just completed a trip, combining business and pleasure, in which he visited all of the Bemis Bro. plants throughout the country. While in Memphis he spent some time with Chuck Loomis and his wife and reports that Chuck is well and is as active as ever. — H. B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, Bemis Bro. Bag Company, Memphis, Tenn.

1917

A daughter was born to Mr. and Mrs. H. P. Eddy, Jr., on March 26. Mr. Eddy has recently been serving as a substitute lecturer in biology at the Institute during a temporary absence of Professor Horwood, due to illness. Lois Lee McGrady arrived on the scene on March 19.

1917 Continued

The first man picked in a syndicated series of stories on Washington headlines happened to be our good friend, Douglas, Director of the Budget, and a clipping has been sent us by Carroll A. Clark of the Class of 1921. If the Review's editorial policy permitted works of art as well as mere mechanistic stunt photography and an occasional architect's sketch, it would undoubtedly reprint the beautiful cartoon that accompanies this story. Douglas is presented as being the paradox of the Roosevelt administration; he is not a brain truster, not a new dealer, not a Tory, but the hard son of "Rawhide Jim" Douglas, the Arizona copper miner and decorated ex-artillery officer with a mind of his own. I am sorry that we cannot reproduce the whole story here. Apparently, our classmate is still in power.

At the meeting of the American Institute of Chemical Engineers in New York, the Class of 1917 was represented by the following members: Messrs. B. F. Dodge, Frank Howard, K. A. Gillespie, D. E. Pierce, H. S. McQuaid, and K. E. Bell. — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

On a trudging day in 1914 one of the varsity wrestling team took on a verdant freshman, just for the exercise. Said freshman had a modest way and a melodious southern accent, all of which added to the surprise of Big Shot Varsity when he found his shoulders neatly connecting with the mat in consequence of the abilities possessed by one E. Palmer Gills. As evidence of the continued possession of that marvelous balance between humility and self-confidence, I submit the following which appears beneath the letterhead of Gills and Beckmann, Architects, San Antonio, Texas.

"I have no news whatsoever that will be of interest, unless perhaps to say that, although descended from no less notorious a gentleman than Jessy James and also the less-known but more hated pirate, Mallic the Salt, I have managed to stick to two honest but far different professions, architecture and ranching. Neither will produce the bullion that intoxicated Jessy and Mallic, but the combination of the two has made me at least well fed and happy — and honestly at that. I have two boys, 12 and 13 years old, and a daughter, only two.

"Part of the time we live at Hillingdon, which is a real ranch, still wild enough to have plenty of deer and wild turkey. When it gets too tame for us, we all go into old Mexico and make friends with the bandits and Indians and hunt black bear and buro deer. My wife, although from Boston, is now a good horse wrangler. She, strange to say, likes her horses wild and unbroken, and has been thrown only three times. You know if one has never been thrown, he has never ridden the real wild ones."

Frank Cogswell Pearson is still with the Reo Motor Car Company with which he has "been located since 1925, which is a long time nowadays to work for anybody. Our company builds, of course,

two distinct types of vehicles, trucks and passenger cars. At the present time I am assistant chief engineer, in charge of passenger car activity. I don't know whether that means a whole lot nowadays when we lay off our men in dozen lots. I still have two or three to pass the buck to. Of course, we all hope that this year is going to be better and we can build up our organizations and do lots more work.

"Outside of business hours I have succeeded in raising a family of two boys, one nine and one 12. The older one actually likes to go to school. He couldn't have taken after me.

"I feel rather in a position of apologizing for not having written you before, but with the ever-changing events nowadays, one is not sure from one month to another where one's address will be and I suppose we put off writing so that you will have the latest news. I am sure that I should be greatly pleased to meet any of our classmates who are in this locality and wish to offer an invitation to all of them to call on me when passing through Lansing, Mich."

And lest those of us who have had a job all the way through this depression fail to count our blessings, turn a mental handspring from your own smug content into the brave circumstances of the unnamed classmate who borrowed a two-cent stamp to write: "I thought you knew that Stone and Webster could no longer use my services way back in 1931. Since then I've walked the streets, sold knick knacks, been assistant to bank presidents, washed windows, and for the past year have been taking money from an oil company for services as a construction engineer. No income tax — no gold coins — and at the rate we're going, there'll shortly be no home! My, how we love this depression! But I have a job, a wife, a child, and a desire to struggle on! If I have any friends left in my sadly neglected Class of 1918, tell them 'greetings'."

Lest you be saddened by the restraint of that all-too-human document, let us grasshopper back to the frivolities which can be so monstrously fascinating when enriched by the vernal friskiness of Don Goss. "I was going through my filing system (heheh) a while ago and I ran across a letter from you that hadn't even been opened and I says to my filing clerk: 'Why did you put this here and not let me see it?' and she ups and says, 'I thought it was a bill from the Institute and I was only following your instructions, Sir.' Of course, she was technically right and your letter was found among the January bills, so it hasn't seen the light of day until idle curiosity made me scan through my accounts due to see if there was a chance of cleaning up before 1943.

"As for personal news, I haven't much to divulge. There has been no increase in my family that I know of, but the quality is better than ever and I feel that I shall continue to raise them instead of drowning a couple, as was once under serious consideration. They're really getting to be quite a credit to their parents in spite of all we can do to spoil them. . . .

"Well, Sir, how are things with the Magounses? Still knocking them stiff at the Institute, I take it, and adding fresh laurels to that noble brow, what? Stay with 'em, old fella, and hope that the next reunion will find me with shoes enough to get there — and a spare pair of slippers, of course." (The brethren will recall how Don tried to make water polo out of golf and as a sad consequence wore his house slippers in rueful retrospect.)

From the Alexander Young Hotel in Honolulu comes a pregnant envelope from Frederick B. Philbrick. Beside attending to the mighty affairs of the Grinnell Company, he has engaged in some sorely needed research for our enlightenment. "I believe that the situation here which would be of greatest interest to the world at large is the incredible absence of a depression. The main industry of the island is sugar, supplemented by pineapple; and for reasons which I cannot attempt to explain, prices have been maintained at a level which allowed them to operate at a profit and a good profit at that. In addition to this most important factor, the conditions and methods of living are such that lack of money would not begin to cause the same hardship or suffering as in New England, for example. They do not require artificial heat at any time of the year and there is no provision for heating in any buildings, either business or residential.

"Nature is kind also with regard to food. The natives can live on fish and poi. They can catch all the fish they want, together with special delicacies such as squid; and poi is made from the taro plant, which they can raise or buy very cheaply. The Japanese, who constitute more than 50% of the population, live largely on fish and rice, with practically the same price set-up.

"Shoes are purely ornaments. It is a common sight to see the natives returning from a dance or other function with their shoes in their hands. To them, the lei, or garland of flowers around the neck, is far more important as an item of attire than mere shoes. Flowers grow everywhere all the year around, so leis are cheap.

"To an engineer, the big problems here are chemistry, as applied to the sugar industry, and obtaining sufficient water to irrigate the growing cane. On one plantation near Honolulu, they pump every day twice as much water as is required for the entire City of San Francisco. They have an Engineers Club in Honolulu and I have met several M.I.T. men at their meetings. I am sure that I have seen in The Review from time to time accounts of the M.I.T. Club of Hawaii, as they try to get all of the gang together every so often. I have not been able to find any classmates; but as far away as this, anyone who is a graduate seems like a long-lost friend.

"I suppose the Massie case caused most of the world to believe that this is a den of ruffians and thugs with morals like Hell's Kitchen. Actually, Honolulu is a most quiet and peaceful city, except

1918. Continued

perhaps for a few firecrackers on the Chinese New Year. Some of the long hairs even tried to stop that age-old custom a little while back, but the Board of Supervisors dropped it like a hot cake when a delegation from the Chinese Chamber of Commerce called upon them and advised them of how many votes they would lose if they passed such an ordinance.

"Time flies and so does man. I suppose the recent successful mass flight of navy seaplanes from San Francisco to Honolulu has done more to link the islands with the mainland than any other single thing. They are now talking seriously of air mail service to Hawaii. In view of the probability of our giving up the Philippines, this would leave Hawaii as our westernmost outpost; and the fact that it is possible to make the trip from the mainland in 24 hours is highly important. I expect to be back on the mainland by spring and will be only too pleased to have you drop me a line there if and when you find opportunity. I will also look forward with great interest to news of the class in the columns of *The Review*."

"Being in Honolulu, I will say Aloha, which means hello, goodbye, God bless you, and everything desirable."

In this world of tears and laughter our inadvertent errors are seldom brushed past unheeded, all of which explains the justifiable glee with which a clipping was dispatched to this desk with the following friendly note: "For the Human Professor (himself) — with thanks from this humble reporter who now has a good head start on that 100 years since one 1918 Class Secretary set him way back in the Class of '77 in acknowledging that Harrington note a few months ago! Well, here's how! Carole A. Clarke '21."

Thus is our own sorry record spread upon these noble columns. The clipping, with a large fanfare of headlines, made much of a simple paragraph contained in the *Tech Engineering News* under title of "Dipping Into the Future." The indiscreet though innocuous statement was merely: "It is no prophecy at all, but merely the application of Darwinian principles to predict the extinction of the homely girl as a result of selective breeding. This, however, is no cause for envying your great-great-grandson. The uncomely damsel has been undergoing extinction for centuries. As the homely girl becomes personable, the pretty girl becomes even more beautiful. Result: the standard of pulchritude goes up and comparisons are still odious."

Verily the world doth revolve in hokey and is lubricated by applesauce. But lest you feel this to be indicative of a black and seering misuse of time on the part of the professor of humanics, be it said that he has traveled well over 10,000 miles this winter in the interest of Technology, lectured in three universities, collected some 553 pages of typewritten notes for his course, and delivered the closing address for the Tenth Annual Industrial Conference of Connecticut; subject, "Maintaining Industrial Harmony." — F. ALEXANDER MAGOUN, *Secretary*, Room

4-136, M.I.T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1920

The members of our class do not appear to have settled down. I have quite a list of address changes for you.

Art Atwater has left Cleveland, Ohio, and gone to England, address 541 Bush House, London. — Ed Brickett has left North Chelmsford, Mass., and is now in Cincinnati; mail address Box 588. — A. H. Castor is with the Radiotron Company in the Sales Department, at 201 North Front Street, Camden, N. J. — O. E. Cooper has left Cincinnati and is now in New York City, c/o Sands D. Rhan and Company, 115 Broadway. — F. B. Culbertson is living at 82 Harding Road, Lexington. — R. E. Davis has moved to Enfield, Mass., address, P. O. Box 147. He is not far from R. L. Davis who is now living at 47 Pleasant View Avenue, Longmeadow. — Al Fraser is still in Wellesley, address 11 Waban Street. — Dolly Gray may be located at 100 East 42nd Street, New York City. — E. P. Grisner's new address is 938 Marion Street, Oak Park, Ill. — Lt. Comdr. Russell Hitchcock has come back from the Philippines and is with the Bureau of Construction and Repair of the Navy Department at Washington. — R. R. Thurston has come back East from Texas and is now in Scarsdale, N. Y., address 4 Farley Road. — Elbridge Wason's new address is 24 Linden Street, Wellesley. — Waldo Brown's new address is 195 Adams Street, Milton, Mass. — Dan Hennessey has left New York and is at 29 Hawthorn Road, Brookline. — J. R. Perkins, Jr., has moved to Wayne, Maine. — C. T. Wilson has been located at 6665 Washington Avenue, St. Louis. My good old friend Ki Chun is with the Yangtze Finance Company, Ltd., 398 Kiangse Road, Shanghai. If you read these here notes, Ki, I sure wish you would drop me a line. — Witold Kosici visited his native Poland not long ago and gave a talk about his trip to the Detroit M.I.T. Club. He is with the J. T. Wing Company of Detroit.

I had the pleasure of visiting Buck Clark's charming home in Farmington, Conn., recently, the beautiful grounds of which are taking all of Buck's spare time away from golf, at which he never was very good anyway.

Your Secretary has just completed his second year of a second term course in advertising for graduate students and seniors of Course XV. He would like to report that the caliber of Course XV men appears to equal the high standard set by the Class of 1920.

Here's wishing you all a long and pleasant summer vacation. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Word of the Review Editors' request that this month's notes be condensed must have reached the ever-obliging

flock and our news supply touched a new low. It can not be emphasized too strongly that the above request applied only to this last issue of the present volume and the lid is off when we meet here in the fall. Get those letters started now!

Thanks to J. P. Maxfield '10, we learn that Harold F. Stose is now with the Atlantic Refining Company, located in Philadelphia.

Best wishes for a pleasant summer to you all from Saint (of Connecticut and the Saint Moritz, New York, — hi, there, Saint Dennie!) and your scribe. When writing while on that trip, don't forget your secretaries. Au revoir. — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, South Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, 10 University Avenue, Chatham, N. J.

1923

A bumper crop of notes is at hand this month just when we have an earnest plea from the Review editors to deliver a set of notes for this issue "condensed and compressed." Being in my own small way an editor (if you don't believe me, write me for a copy of the 12-page monthly, *Volunteer Firemen*, with a circulation of 20,000), I can sympathize with them in the load which the seasonal overflow of notes always places on the July issue.

R. H. Park, VI, transferred a couple of years ago from Stone and Webster to the Calco Chemical Company, Inc., of Bound Brook, N. J. This last year he was placed in charge of a newly formed laboratory for physical research. — Captain S. P. Meek, Army Ordnance, writes from Hawaii, where he is now stationed, that the only note which he thinks might be of some interest about himself is his writing. His first book, "Jerry, the Adventures of an Army Dog," was published by The Century Company in April, 1932. His second, "Frog, the Horse That Knew No Master," was published by the Penn Publishing Company in 1933. His third, "Monkeys Have No Tails in Zamboanga," is scheduled for fall publication this year, and he is writing a fourth under contract, to come out in the spring of 1935. The name will be "Gypsy Lad" and it is a story of the hunting dog field trials.

C. S. McCann accounts for himself in a range of experiences financially and socially which he says covers as much happiness and sadness as could well be crammed into that many years. After graduation he was for several years inspecting and designing engineer with Hugh L. Cooper and Company, at Muscle Shoals, Wilson Dam, Ala. Subsequently he has lived in Dayton, Ohio, and held various engineering positions with, successively, the Dayton Power and Light Company, the Inland Manufacturing Company, General Motors Radio Corporation, and the Hydraulic Products Corporation. He is now shock absorber development engineer of the Delco Products Corporation. He was married in Alabama

1923 Continued

in 1925, had a daughter born in 1929, and was divorced in 1933. Since then he had been living with his parents in Dayton until his home with all belongings was burned to the ground in March of this year. This he says accounts for his residence at the Dayton Biltmore, from which he writes.

Joseph L. Hetzel, VII, went to Yale Medical School after leaving the Institute. Trained in pediatrics, he has established an office in Waterbury, Conn., with Dr. J. H. Root, and reports having succeeded in keeping just out of reach of the local sheriff. — An item which I report with keen personal regret is the death on February 17 of Nelson T. Mann, II, as a result of a combination of pleurisy and pneumonia. He was a next-door neighbor of mine in Hyannis, and we grew up and went to high school together. He was a brilliant lad and one of much promise. Up to his death he was with Scudder, Stevens and Clark, Investment Counsel, at One Wall Street, New York.

Charles H. Robinson, XV, teaches mathematics at Eaglebrook School, Deerfield, Mass., and also, with his wife directs children's summer camp activities. This summer he reports he is taking nine-year-old C. H. R., Jr., to Keewaydin Camp in the Canadian wilds at Timagami, Ontario, while his seven-year-old Sally goes with Mrs. R. to Songadeewin Camp at Barton, Vt. — James H. Evans, VI, who is with the Boston Edison Company, moved from Brookline to Wellesley because of one small daughter, aged five, for whom he said that town appeared to have peculiar educational advantages. — Dale Purves, II, was married to Miss Louise A. Allen of Chestnut Hill, Philadelphia, where they are now living, on February 27, 1933.

This is a somewhat belated record of the promotion of John H. Read, Jr., of the Army Ordnance from Lieutenant-Colonel to Colonel. He is stationed at the Ordnance Depot at Curtis Bay, Baltimore, Md., where the War Department stores smokeless powder and other components of ammunition for guns of all calibers. — Alfred Clough, I, civil engineer with the New Hampshire State Highway Department, was married on April 28 to Miss Doris E. Goddard at Nashua, N. H. — William H. Lazear, XV, was married on February 24 to Miss Constance Dumoulin at Santa Barbara, Calif. — Charlie Mapes, VI, who is with the Am. Tel. & Tel. in New York and active in New York Club affairs, was married on April 17 to Miss Mary Louise Melvin of Corning, N. Y. The couple went to Bermuda on their honeymoon and were planning to live in Hackensack, N. J.

Although the sheriff may not yet have caught up with Dr. Joseph Hetzel, it appears that a certain young lady has. Since writing the item about him above I ran across a clipping from the Boston *Transcript* announcing his engagement to Miss Margaret Spencer de Lancey of Waterbury. — At Technology Roderick Bissell Jones, VII, added a master's

degree to an A.B. he already possessed. Subsequently he annexed a Ph.D. in Physics at Yale and a LL.B. and has been admitted to the Bar in Connecticut and New York. He is a member of the firm of Warfield and Brown, New York attorneys, a firm specializing in patent litigation. — Hugh Chase, I, is teaching geology at the University of Maine, Orono.

On January 1, 1934, Frank C. Isely, VI, for a time instructor in physics at Harvard, was appointed seismograph engineer for the Geophysics Department of the Continental Oil Company, with headquarters at Ponca City, Okla. He is at present carrying on field operations in Texas. — J. H. Cox, VI, is with the Westinghouse Electric and Manufacturing Company in Pittsburgh, engaged in the development and design of mercury arc rectifiers. He is also commanding officer of the U. S. Naval Reserve Division at Pittsburgh.

Of interest to philatelists is the announcement which appeared in the New York *Herald-Tribune* of April 8 and the magazine *Stamps* for April 7, that Ernest E. Fairbanks, XII, is the fortunate finder of nine pair of the "rarest U. S. Twentieth Century non-error stamp." The cash value of this discovery amounts to approximately \$15,000. The stamp itself is Number 594 of Scott's catalogue. Fairbanks is with Fairbanks Photo Service at 134-14 Franklin Avenue, Flushing, L. I., N. Y., and is the inventor of devices which have been manufactured for several years and is now bringing out a very unusual type of gauge for stamp collectors necessary to find the \$1,000 stamps listed by Scott. For the benefit of any readers needing cash, Fairbanks reports that he is in the market to buy U. S. stamp collections.

John S. Keenan, VI, a change in whose address was received as the result of his purchasing a new house, is assistant manager of the Canadian General Electric Company, at Toronto.

Pete Pennypacker reports that a picnic will be held by the New York Club at Echo Lake, N. J., on May 26, but as these notes go in a few days before that date we'll have to report further on it later. Pete says he recently had a letter from Bobbie Burns, I, stating that he is fast becoming a Ph.D. at Cambridge University, England.

Plans were made at last summer's reunion for an informal gathering at Riversea Inn, Saybrook, this year on the part of any of the fellows who could make it. The week of June 17 may therefore find a number on hand although no "roundup" is to be attempted. Plans were indefinite until recently, so no announcement in the May issue could be made and there being no June issue, the affair will have to depend wholly on the extent to which the spirit moves individuals to repeat the enjoyable gathering of a year ago. — HORATIO L. BOND, *Secretary*, 195 Elm Street, Braintree, Mass. JAMES A. PENNYPACKER, *Assistant Secretary*, Room 661, 11 Broadway, New York, N. Y.

1925

A note is at hand from our President, Frank Preston, asking us to hold the presses for news of an informal class dinner which he is holding at the Technology Club in New York on the evening of May 23. He adds that his temporary address is 102 E 22nd Street. Here's the story:

"I have deserted the farm and am now hunting a better job around here (New York). So far, my only luck has been a three weeks' job as statistician for the New York State Motor Truck Association. Last night I held a class dinner at the Tech Club and gathered a bit of news for *The Review*. Nine members of the class attended the '25 dinner at the Technology Club of New York on the evening of May 23. Some of them I had not seen since 1929, which gave us plenty to talk about.

"Since roughing it in Latvia for the Bureau of Foreign and Domestic Commerce, Fred C. Sommer has been in Stockholm for a year and in Helsingfors, Finland, for two-and-a-half years. The wave of economy in the U. S. A. caused the Government to shut up a number of its offices, and release about a hundred commercial emissaries, of whom Fred was one. He is now connected with the RFC in New York.

"Wilder E. Perkins is with the Manhattan Rubber Manufacturing Division of Raybestos Manhattan, working on production problems in the capacity of department manager. He is married and has two children, a boy of four and a girl of two. — George Caine is with Tide Water Oil Company as assistant process superintendent, married and no children. — Sam Samuelson is still with Abraham and Strauss in Brooklyn as budget comptroller and purchasing agent, still single.

"Connie Enright reports that he also is still single. He has weathered the depression and is still employed by the N. Y. Telephone Company. After touring around Manhattan Island, he is now located at 453 West 50th Street as division plant supervisor of the western division. — Frank McGinnis, another bachelor, says he is still hanging on at Claude Neon Lights, Inc., as assistant sales manager and utility outfielder. — Roger Parkinson, assistant engineer for the American Sugar Refining Company in Brooklyn, is living in New Rochelle. Since the birth of his second child, a girl, now a year old, he has moved into a house.

"Milton Salzman also has two children, a girl three years old and a boy 10 months old. Milt is purchasing agent for the factory departments of R. H. Macy and Company in Long Island City, buying everything from aspirin tablets to diesels. — George Chapline could not attend the dinner because he was going to Hampton Roads on the annual pilgrimage of aeronautical engineers to see the demonstration of the year's work of the N. A. C. A. — It is expected that these dinners will be held monthly, probably on the fourth Wednesday of the month.

1925. Continued

Anyone who wishes to attend and who is not on the mailing list can find out the date and place from the Technology Club of New York."

Nelson Malone, II, in a letter regretting the absence of news from his Course, adds: "May I suggest that in your notes you refer to the fact that 1935 is a Class Reunion year. You will need to . . . definitely establish the fact."

Frank Fricker, inspired, he says, by "the perusal of your class notes" and "a before-dinner cocktail," sends us a letter which reads in part: "I've a wife, yes, and a boy two and one-half years old, and a baby girl just eight months old. What with two choice German Shepherd dogs, whose pedigrees arouse all my admiration, not to say awe, and a home in the country, I'm very busy after meeting the demands of my life's work, dear old Ethyl. I'd love to tell you that I'm a big shot but I'm not, just a minor executive in the Ethyl Gasoline Corporation. As business director of our Research Laboratories, I find enough of the technical to keep my engineering tastes well satisfied, and enough of the human-contact aspect to keep me interested in my fellow man. We have another '25 man in our company, Douglas P. Jeppe, who was a shining light on the track team for a while. Doug is in the sales department, and is stationed in South Carolina, where he married a Southern girl, and at the last report was the proud papa of a son. In addition we have several Tech, or near Tech men in our Chemical Research Laboratory: George Calingaert, who was in the D. I. C. & R. at one time, and perhaps was an assistant, is now Director of our Chemical Research Department; John C. Pope and Fred J. Dykstra were also in the Graduate School and possibly on the staff."

"We have an active local Alumni group and I see many of the boys from time to time. Max King is in the bond business here, and Howard Emerson is with a large company making conveying equipment as their Detroit representative, I understand. Max has a wife, a girl, and a boy, and Howard is married, I know, although I don't know about children."

"I see Chink Drew whenever he is in town. He is with A. Schrader's Sons, selling valve caps and springs, and so on, to the oil companies from Detroit to Denver to New Orleans. Chink was married last summer to Miss Lillian Jones of Detroit."

Freddy Walker, V, writes at length from his home in Niagara Falls, N. Y., I quote portions of his letter as follows: "I am now in a much better position to supply you with information concerning Tech men in the vicinity. I am now editor of the Western New York A. C. S. publication, *The Double Bond*, and am enclosing a copy of it in this letter. This gives me a chance to get information about all Tech men in Western New York who are also members of the A. C. S. I shall now broadcast concerning two men whom I have met who are not members of the A. C. S., to wit: Edward B. Alex-

ander, VI-A, now married and living in Lockport. I met him at a dinner of the Niagara Falls Technology Club. — Ira D. Chambers, X, now married and living in Niagara Falls, and employed by the Roessler and Haslacher Chemicals Department of E. I. du Pont de Nemours and Company. Formerly employed by du Pont at Wilmington.

"Concerning myself, I haven't very much in the way of news. Lois Mary and Frederic Rockwell have reached the more mature years of 29 months and 14 months, respectively."

"The last day in January I woke up to find myself with a case of appendicitis, and went to bed 'sans appendix' in the N. F. Memorial Hospital. My recovery was uneventful. After a pleasant and lazy vacation of about one month, I hauled me back to the laboratory and continued my interrupted 'chemickings'."

M. L. Umpleby, Headmaster of the Englewood School for Boys, announced recently the appointment of Mr. Thomas W. Tuttle as instructor of science for the remainder of the academic year. Since graduating from Tech, he received his M.A. at Columbia in 1934. The note adds that he has had a wide experience in academic fields, as well as six years in industry with the General Electric Company and the International Telephone and Telegraph Company. He has traveled extensively in Europe and spent one year in Cuba in the employ of the Cuban Telephone Company.

Two press clippings are at hand, one announcing the engagement of Joseph Helling to Miss Ruth Wheelwright of Boston, and the other the marriage of Robert R. Crosby, Jr., of New York to Miss Eleanor Ripley of Flushing, L. I. On the return of the latter couple from their wedding trip they will reside in Great Neck, L. I. — HOLLIS F. WARE, *Acting Secretary*, 16 Smith Avenue, Reading, Mass. HENRY V. CUNNINGHAM, JR., *Secretary*, Boston, Mass.

Course I

A letter from Chevy Chase, Md., shows that Russell Mader, who left M.I.T. in 1924 to go to work for Uncle Sam, is still in Washington as associate examiner in the Patent Office. He reports that, after spending eight years on road building machinery, he has been transferred to the textile division. He also sports an LL.B., having graduated from law school. At the end of his letter a cryptic P. S. adds the phrase "married, but no children."

As for Ralph Lewis, I find that after reading his two-page masterpiece of kidding, during which I had to consult the dictionary several times, I feel at a loss to know how to do it justice. But to be brief, after eight years as a water power engineer he became submerged in the tidal wave of economics and received a leave of absence until things pick up. At present he and his wife are working as sales representatives for a yarn concern with a territory in the Middle West. He adds that if anyone needs a sweater mended to call on them. His mail address is care of R. C. Williams, 1188 Hope

Avenue, Columbus, Ohio. — KENNETH LUCAS, *Secretary*, 435 Franklin Street, Reading, Mass.

COURSE III AND XII

It is a pleasure to announce that Ralph Ilsley was awarded the degree of Doctor of Science in Geology in June. I am sure every member of the class joins in extending him congratulations. For the past two years, Ralph has been assisting in the Department of Geology at M.I.T. and during last summer and the school year 1933-34 completed his research on "Structural Geology of Eastern Massachusetts". In collecting field data, it was necessary to run about 8,000 miles of automobile traverses, covering thoroughly the area between Exeter, N. H., and Newport, R. I. The completed thesis includes in part, seven new geological maps of the area covered. One of these maps is of Eastern Massachusetts, while the others cover several particular sections.

A recent issue of *Mining and Metallurgy* carried items regarding each of the 12 women members of the American Institute of Mining Engineers. Mrs. Edith Chartkoff Meyer, quoting *Mining and Metallurgy*, "attends to all the metallurgical problems at a lead-zinc property in the Altai Mountains, Zyrjanovsk, Kazakhstan, U. S. S. R., where her husband is mine superintendent." — F. L. FOSTER, *Course Secretary*, Room 6-202, M.I.T.

1926

As the Secretary reluctantly mounts the podium to conduct the last concert of the season, his regret is somewhat relieved by the variety of items available for this final program. He will run it all through *pizzicato*.

The following '26 men have attained a degree of distinction which admits them to that compendium of intellectual achievement, "American Men of Science": Leo Jurgenson, Valentine F. Harrington, Thomas L. Gledhill, John A. Gibson, Jr., John M. Gaines, Jr., Irving A. Cowperthwaite, Alan E. Cameron, James A. Boyd, Jr. The Secretary is indebted to Professor Magoun for this information. Who will be the first '26 men to be selected for "Who's Who"?

Continuing the march of the Ph.D.'s is Marron W. Fort, who obtained his degree last December at Technology. — The gentlemen members of this class had best look to their laurels, for some of our women colleagues are progressing astonishingly. Frances Hurd Clark is metallographist for the Western Union Telegraph Company in New York. The work in her laboratory consists of studies covering metals used in tools, line wire, ocean and aerial cable, and automatic equipment for telegraphic communication. Some investigations comprise failures of metals while others are concerned with the development of new alloys or the use of metals in connection with the designing of telegraphic equipment. Miss Clark says the work is very interesting indeed and that she has never regretted the selection of metallurgy as a profession. —

1926 Continued

Dorothy Quiggle is working in the Petroleum Refining Laboratory of Pennsylvania State College.

The Rev. Raymond B. Blakney was recently invited to become pastor of the First Congregational Church of Williamstown, Mass. — Daye Harrison, who has been in correspondence with your Secretary recently, is having a busy and successful career with the Fairchild Aerial Camera Company in New York. — At a recent meeting of Technology alumni of the Rhode Island Club, the Secretary met Martin Walter. He is with the New Bedford Cordage Company. — Richard L. Cory is back in the East after having spent several years in Nevada. His address is Public Works Office, 4th Naval District, Philadelphia. — Sid Baylor, long lost, is working for the Eastern Appliance Company at 250 Stuart Street, Boston. — Francis R. Van Buren has been discovered at this curious address: Children's Hospital, Cincinnati, Ohio. — Bean Lambert has forsaken New York and taken up residence at Eccleston, Md. — Rene T. Brosens is at 38 Rue de Naples, Brussels, Belgium.

Miss Mona Conner of Exeter, N. H., was married to Charles Rich, of Nashua, on April 27. — Miss Loraine Leeson of Boston was married to Walter E. Campbell on April 7. — Miss Constance Langley of East Orange, N. J., was married to Philip M. Allen on May 19. — The Secretary reports the birth of a son, Rhyne Meredith, on May 6. — J. RHYNE KILLIAN, JR., *Secretary*, Room 11-203, M.I.T., Cambridge, Mass.

1927

Charlie Smith has written a newsy letter telling of the various men he has seen in and around Nichols, Conn. For the past four years, Charlie has been doing design and production engineering on construction materials and appliances at the Bridgeport Works of the General Electric Company. He is married and lives at 1526 Huntington Park, Nichols. — Larry Cheney, I, is married and living at 1012 Whalley Avenue, New Haven, Conn. Charlie met Hank and Mrs. Kurt last fall in New Haven and we learned that Hank may be found at the New Haven Airport almost any time of the day or night.

Soapy Woodbury, I, was married May 13, 1933, to Miss Hester Andrews of Gloucester. They are temporarily located at Northampton, Mass., where Soapy is superintending the construction of a power house at the State Hospital. A clipping from the New York *Herald-Tribune* dated January 10, 1934, announces the engagement of Miss Anna Dorothy Clark to Carl Wies. Miss Clark attended Wildcliffe and Connecticut College for Women. After graduating from the Institute, Carl took a medical course at Yale and is now at the New Haven Hospital.

An anonymous letter tells us that Henry Johnston is married and has one son seven months old. They are living at 569 Elm Street, West Springfield, Mass., where Henry is employed in some paper mill. — Harry Fowler is married, has two children, and lives in West Springfield. We

have no information as to Harry's job. — Carlton Grace is married and lives at 247 Duane Street, Orange, N. J., and is employed by Frigidaire Conditioning Corporation.

Lester Woolfenden married Ethel Lester of Freehold, N. J., in 1928. They have two sons: Glen, four years old, and Donald, five months old. Les is working at the General Aniline Works at Grasselli, N. J., as a chemical engineer and has been there for the past five years. He is living at 425 South Broad Street, Elizabeth, N. J. Prior to moving to New Jersey, Les made an extensive trip to China, Philippines, Honolulu, California, and way-stations on a tramp steamer as quartermaster. In Honolulu he saw Ralph Johnson for a day and enjoyed the traditional Hawaiian hospitality. — Word comes that George Houston is now located in Wilmington, Del., and is working for the du Pont Realty Company. — JOHN D. CRAWFORD, *General Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. RAYMOND F. HIBBERT, *Assistant Secretary*, 250 Stuart Street, Boston, Mass.

1928

We are pleased to announce the engagement of Dennistoun W. Ver Planck of Salem and Philadelphia to Miss Elizabeth Adler, daughter of Mr. and Mrs. Edward A. Adler of Schenectady, N. Y. Dennis's engagement was formally announced in April, but we are certain his former associates in Course VI will be pleased to see the news in this column. Miss Adler was graduated from Radcliffe College in the Class of 1929. Dennis is now working for the General Electric Company in Philadelphia.

It was also pleasant to hear of the engagement of a former Course XV classmate, namely, Eric Hartmann, to Miss Mary Rhoades Atwater, daughter of Mr. and Mrs. Henry Day Atwater of Norwell, Mass. After receiving his degree at the Institute, Eric added a master's degree at Harvard University. Both he and his fiancée are members of the faculty of Milton Academy, Milton, Mass.

A recent weekly bulletin from the Engineering Association of Hawaii summarizes a very interesting talk by Professor Carl B. Andrews of the College of Engineering, University of Hawaii.

We have received the announcement of the marriage of Mr. F. Dallas Sparre to Miss Geraldine Downs. The wedding took place on Saturday, the 12th of May at the All Saints Church in Chevy Chase, Md.

Word has recently been received from Lynchburg, Va., announcing that Ames Hettrick, of *Voo Doo* fame, is now the proud father of a son, John Lord Hettrick, born on April 24. Congratulations, Ames!

From Chicago we have received a line from Dick Goble. Dick, as you remember, is the chap who had difficulty with his wearing apparel on the class picnic. For the past five months, he has been suffering with a rather long siege of appendicitis and pneumonia. We hope that by this time he is well on the way to recovery.

Dick's address is 230 North Canal Street, Chicago.

From New Haven has come a letter from Reg Keith, Course IV-A. Reg is the father of two children: a little girl, aged two, and a boy, aged three months. He is still with the Telephone Company and will be glad to see any '28 men who are traveling through New Haven.

On June 16, Jack Chamberlain, XV, was married at the First Baptist Church, Brookline, to Eleanor Lucy Bowker. Jack, known in medical circles as Dr. John Winslow Chamberlain, has recently returned from an internship in Rochester, N. Y. — George I. Chatfield, *General Secretary*, 5 Alben Street, Winchester, Mass.

N.B. The last chapter of Class Notes for our sixth year as alumni should be clothed with this appropriate title — "The Wedding of Secretaries" — as both of our old faithfuls, George Chatfield, and his able lieutenant of Course I, George Palo, joined the ranks of benedicts last April.

George Chatfield said "I do" very earnestly and firmly so that none present could doubt his intentions on April 28. His bride, Marie Walters, is a Simmons graduate, Class of 1930, and like her pace-setting bridegroom, a leader in class affairs.

The Class was well represented to do honor to our noble scribe and incidentally to see that George Irving received his long overdue share of rice and confetti. Joe Parks, Bill Kirk, and Bill Carlisle participated in those wholesome festivities while by stint of social convention I was forced to stand on the sidelines and pack bags. Johnny Reynders drove down from Worcester to join in the fun.

About a week before the wedding, Bill Carlisle and Al "Tabby" DeBaggis, our officially adopted class mascot, sponsored a bachelor dinner for Chat which was in reality a dignified feast of Bacchus. The dinner was held at the old headquarters of 1928 at 420 Memorial Drive, which was especially bedecked in fitting costume for this perfect dinner. With Chesterfieldian precision, a seven-course dinner (and necessary appurtenances) was served to the assembled wedding party. Fitting toasts were drunk to our "Mr. and Mrs. Secretary" and never shall those glasses be used for less noble purposes! Oscar, of Waldorf Astoria fame, would have had difficulty in arranging as fine a menu and setting as Bill Carlisle devised and executed in George's honor.

On April 5, in New York City, at the Little Church Around the Corner, George Palo solemnly vowed to do honor to a course in domestic engineering. His teacher will be the former Miss Ann Groebler of Yonkers. After the wedding, a dinner in honor of Olap and his bride was held at the Hotel Lexington. Many Course I, 1928, men were present, although I am sorry that more intimate details are not available.

To George Chatfield and George Palo who have served our Class so faithfully, I am sure you fellows join me in sincerely wishing every happiness this old world

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has to offer — and, incidentally, more class notes. — RALPH T. JOPE, Room 11-203, M.I.T., Cambridge, Mass.

COURSE I

After five years of futile effort, Locklin has at last come to life. He is still with the Georgia Power Company and his address is Box 2125, Atlanta, Ga. His job is nursing a steam station, endeavoring to keep it on the line. — Wally Hodder has left New York and his address is now 170 School Street, Watertown, Mass.

George Mangurian is one of the busiest of our classmates, keeping Chance Vought planes up in the air. He is moving to a new apartment in a few days, so address him care of Chance Vought Corporation, Hartford, Conn. A recent letter said he was to have dinner with Bissell but advanced no further information along those lines.

I understand that other sources have supplied The Review with a detailed account of the fact that Miss Anne Groebler and I were married on April 5. Knowing the author of said story, I'm awaiting The Review with frank, if shuddering, curiosity. In case any of you fellows land in New York, Anne and I would be glad to see you at our apartment. — GEORGE P. PALO, *Secretary*, 360 East 234th Street, Apt. 1-1, New York, N. Y.

1929

Another five years to the next reunion. Let's hope that we are in such a wave of prosperity by that time that we'll all be able to get back to enjoy it. Writing these notes in May for the July Review does not give me an opportunity to include any pertinent observations on the good time at Winchendon. Fish Hills and his reunion committee deserve our many thanks, however, for their success in organizing our reunion even at this early date (May). I'm sure that in July, Fish and the committee will have plenty of praise coming to them for a fine reunion. Now that this reunion is over we should start figuring on our Tenth in 1939.

It is with deep sorrow that we announce the passing of another of our classmates, Alonzo D. Nicholas, Jr., VI, who died February 19, 1930.

Word has just been forwarded that Bob Phillipe, I, has finally landed a job, as he puts it. He reports that he is in the U. S. Engineer Office, Zanesville, Ohio, and that it is without doubt the world's dirtiest town which with the terrible weather doesn't present pleasant prospects. However, he is there in charge of soils investigations for the Muskingum Flood Control Project.

In December, 1933, two of our scholarly classmates were awarded doctor's degrees. They are "Hash" Hershberg, X, and Ed Higbee, Jr., V, and will henceforth be known as Dr. Emanuel B. Hershberg and Dr. William E. Higbee, Jr. Congratulations from the class! — Don't be surprised if Ed Farmer, VI, should pass you by with his chin high, for Ed's first-born has just been announced. Ed became the parent of a son on March

25 and his name is John Martin. Many congratulations, Ed, and we hope that your wife is still doing well. — Scotty, Ken Scott, X, was married about April 30 to Miss Maxine Ashley Damren of Melrose, as nearly as I can judge from the clipping from the *Transcript*. The clipping also noted that they will live, after June 1, at North George Street, Rome, N. Y.

Phil Lamb, XV2, was among those who filed their notices lately. Phil's engagement to Miss Alma Frances Scott of Easton, Pa., was announced in the New York *Times* of April 15. Phil is apparently associated with the Individual Drinking Cup Company of Easton. — The announcement of the engagement of Kenneth Russell, VI, to Miss Georgia Roberta Montgomery of Pelham Manor, N. Y., was made April 7 at that place. It was also announced that the wedding would take place in the early summer. — The Paris edition of the New York *Herald* announced the marriage of Miss Susan Cony Mellon, IV, to Stephen Caldwell Millett, Jr., of New York and Paris. We join in extending our best wishes to the above classmates.

Remember, any news for publication in the October issue must be placed in the hands of The Review Editors by August 25. Send it in to me earlier than that and we'll get it in that number. — EARL W. GLEN, *General Secretary*, Box 178, Fairlawn, Ohio.

1930

COURSE X

The most recent Course news is the wedding of Stan Wells and Miss Anne Van Laer, of Rochester, N. Y., held in that city on June 23. The engagement was announced last December. The couple will live in Rochester, address as yet undetermined. Best of luck to you, Stan, and may all happiness be yours!

The addition of Wells to the ranks of the married leaves Dick Wilson as the lone bachelor of our Kodak quintet, since Ralph Peters, Greg Smith, and myself are now old-timers in the field.

It is a pleasure to announce the progress of two budding engineers of the future, Charles C. Ladd, Jr., and Ralph W. Peters, Jr. Both are about 18 months old now, and from all reports, seem to be headed toward fame and fortune at a rapid rate. Peters has moved recently and his address is now 23 Audubon Road, Rochester, N. Y.

Greg Smith has maintained his interest in contract bridge, and manages to keep a tennis racquet and an amateur movie camera in operation much of the time. At Kodak Park, Greg is located in the gelatine plant, and, from the evidence of a new car this spring, things must be going pretty well. — Sanford Moss has demonstrated his versatility in several fields since graduation. After a year at Cambridge University, England, on the Redfield Proctor Fellowship, he worked for a while in the Buffalo Plant of the National Aniline and Dye Corporation. He is now carrying on research on cellulose for the Viscose Corporation, Marcus Hook, Pa.

Herman Botzow is in the gas business — not hot air — but a concern making compressed oxygen, nitrogen, and so on, in Newark, N. J. He started in at the bottom of the ladder and has held pretty nearly every job in the plant, so the story goes. At present, they are trying to make a salesman of him, with good success, we hope. — Forsaking the simple life of Hawaii, Whit Weinrich is back in the States with a job on research problems of the Gulf Refining Company, located in Philadelphia. Whit and Herm have been threatening to visit Dick Wilson for some time, and the odds at present are in favor of their making the threat good in the near future.

When last heard from, about a year ago, Bill Waite was with the Alco Products Company, Dunkirk, N. Y. Carl Franz, according to the last report, is with General Chemical. Byron MacKusick, Charlie Van Gelder, and Frank Fahnestock were last heard of at the Vacuum Oil Company, Paulsboro, N. J. — E. I. Birnbaum is with a concern making sulfonated oils and specialty products for the textile industry, located in Woodbridge, N. J. His name has appeared among the list of abstractors for *Chemical Abstracts*. Getting on in the world!

No news from Akron, where Ralph Rowzee, Jim Holden, Ted Riehl, Phil Holt, and Jim Merrill are employed by Goodyear. Phil is another one of our married men, now of long standing. — The E. L. Patch Company of Stoneham, Mass., is getting the benefit of Anthony Savina's researches on cod liver oil. Tony seems to like his work in pharmaceutical chemistry, and occasionally gets in at M.I.T. to look up some library reference. — Paul Hahn, whose home is at 265 Westminster Road, Rochester, has a fellowship in experimental pathology at the Medical School of the University of Rochester.

Gordon Lister is still with Carbide and Carbon at Charleston, W. Va. Indirectly, we hear that he has been transferred from operations to design and engineering work. — HOWARD S. GARDNER, JR., *Secretary*, 380 Ridgeway Avenue, Rochester, N. Y.

1931

Three of our bachelors are engaged in the process of faltering. Bob Baxter was married in February to Miss Dorothy M. Garrison of New Jersey. This is what you might term bringing bachelorhood to an end with a Garrison finish. Congratulations, Bob. We always know that another year has rolled around when we get a letter from Bob. Maybe now that he has settled down he will make it a semi-annual affair.

Although Wyman Boynton's letter doesn't speak for itself, it does speak for Nels Haskell. The letter follows:

"I imagine that you had come to believe that I had almost dropped off the end of the earth, but not quite. Saw Nelson Haskell in Lockport, Ill., about ten days ago and he is some dirty oil man. He looked, the first time I saw him, as

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though he had spent most of his time endeavoring to get about as much petroleum coke dust and fuel oil as possible on his person. But that is not the main point of these ramblings: he is too modest to write himself up for publication in the alumni column, so someone else has to do it. Last Christmas Miss Jane Perkins of Lockport announced to the world that she had acquired property rights in him, and between them they intend to make that state permanent some time this summer. The wedding will be in Lockport. . . . Nels seems to be doing "oil" right in more ways than one. Good luck, Nels. Remember that a Harvard man shouldn't dirty himself with nasty oil. I'll try to send that list of addresses as soon as I can. There have been so many changes of address among our brethren that some of them are harder to keep track of than Dillinger. Cupid has our old gym star Stu Knapp hanging on the ropes, with the announcement of his engagement. Stu is with the du Pont Company.

John Harrison is working in Glen Falls, N. Y., and reports satisfactory progress. — Yours truly is in the gum paper division. If any of you are in the vicinity, "gum" up and see me sometime. — JOHN M. MACBRAYNE, JR., *General Secretary*, 55 Boylston Street, Watertown, Mass.

COURSE I

Within the last few months two of the old faithful have crashed through with news items. From Hank Childs, in January, we hear: ". . . Still working for the City of Waltham, construction. Jack Brown is working as a timekeeper in a Peabody tannery. Johnny Olson, CWA, McClintock, is teaching school in the back woods of some southern state, maybe Virginia. Holden is down South on a power company's surveying party. . . ."

And from Aillery in April: "I must admit being a very poor correspondent, just as bad as the rest of the class, judging by The Review. Phoenixville feels as far away from civilization as does Des Moines. Tech men very seldom wander up this way and notwithstanding that we have a very fine U. S. Post Office here, Tech men very seldom even write.

"Anyway, I'll pass on to you the little I know about the others. G. D. Shellard dropped in last summer. For a while he was with New Jersey Public Service, but now he's working with some insurance firm in New York City, living at home in Ridgewood, N. J. — Last summer a letter from Nelly Sageman (3127 Avenue N $\frac{1}{2}$, Galveston, Texas) proclaimed the news that he was a wandering minstrel, or Anthony Adverse reincarnated, or what you will. His journeyings have taken him from coast to coast, and from Canada to Mexico. His vocations have ranged from engineer to golf instructor and nurse.

"Orbanowski has been doing his bit of traveling, too. For a while he worked in the Quincy Shipbuilding Yards. Now he's in Berlin, Germany, the old country,

working for a building contractor and doesn't intend to return until the depression is over. Last month I received a card from the World Amateur Hockey Championships, being played off in Milan. Obie was playing on the team representing Germany!

"That's about all the dirt about the boys. I've written letters to lots of others and haven't received any answers. Maybe they're saving for a postage stamp.

"As for myself, I've been fortunate enough to be able to thumb my nose at Lady Depression, so far. This I say with fingers crossed, because you know what state the steel business is in now. Immediately after Commencement in 1931, I took two weeks of O.R.C. training with the regular army at Fort Ethan Allen in Vermont. It being a cavalry post, we did plenty of riding. One Sunday afternoon, on the last day of my training period, Gil Ayres, VII, and I tried some 'Epsom Downs' stuff and we got into a little jam involving both horses, eight automobiles, and three counties. I've forgotten the details. Anyway, I spent a month in the Army hospital with 23 stitches in different parts, and rated a headline in the Burlington, Vt., daily. Gil wasn't hurt. Incidentally, I was paid my full lieutenant's pay for that month in bed, and that's by far the most lucrative salary I've drawn since leaving school.

"Here, with the Phoenix Bridge Company, I mess around with steel bridges, detailing, estimating, and the allied arts. The personnel of the company includes five other M.I.T. men so I'm not alone. My extra curricula activities have been varied. I've fallen into a group of artists and professional magazine illustrators that offer quite a relief from the drafting room. Hence, my studio life is intensive. I've taken up painting with a zest, go on outdoor sketching parties, and have even had some water colors exhibited.

"They give plays and shows around here, so I'm an actor. With the reputation that I've been educated (?) within the intellectual atmosphere of the Hub, I've been trying to elevate Phoenixville's brand of stage entertainment (without apparent success) as an actor, director, and scene painter. Oh, well, it's lots of fun. I'm sorry, but there's no more paper." That is what I call a fine letter. How's for a few more like that? Aillery's address is 215 Main Street, Phoenixville, Pa.

And from Buck Moody we hear: "Mr. and Mrs. Charles J. Alexander announce the marriage of their daughter, Elinor Ruth, to Mr. William T. Moody on Sunday, the 15th of April. At home, Boulder City, Nev." Congratulations. — NELSON B. HASKELL, *Secretary*, 527 East 11th Street, Lockport, Ill.

COURSE VII

Israel Bearon (the Count) was around the Institute last fall taking a course in anatomy in anticipation of going to medical school next fall. He is still working at the Boston Post Office. — Wendall Currier is still with the Campbell Soup Company, at least that is what our last reports concerning him say. Since New-

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buryport burned down, it looks as though the soup company would be doing a rushing business in Wendall's old home town.

Stan Deake is still working for the State of Massachusetts, doing biological work. He was given a new lab a while back. He brought in a load of trout for open house. They sure made us hungry. Incidentally, Stan is daddy to all of the Massachusetts trout. I saw Stan several times this past winter at Symphony Hall. He is still single in spite of all predictions to the contrary. — Harold Duncan is still with us here at the Institute as a teaching fellow. He has been quite busy this past term taking over a large part of Dr. Horwood's classes because of the latter's illness. He hopes to get his Ph.D. next June (1935). — Paul Elbaum is still with the United Fruit Company selling bananas. He was married a short time ago and went down to Honduras on his honeymoon. We offer him our congratulations and our best wishes for future happiness.

Helge Holst graduates from Harvard Law School next month. When I last saw him, he had nothing definite to do, although he had a lead on a job as health officer in Porto Rico. — Mayer Hyman is still at the University of Chicago Medical School. He will enter his third year next fall. He has been doing very well out there. — Sam Jacobson is here at the Institute working toward his Ph.D., which he hopes to receive next June. He is a full-time student. — Fred Nord-siek is still with the Borden Company doing research. He is thoroughly at home with the job and likes it first rate.

Bob Phelan is with the Atlantic Gelatin Company and is making out very well. He is seen at the bimonthly meetings of the Boston Bug Club. He hasn't changed a bit and you all know what that means. — Bryce Prindle is still at the Institute doing work under the Textile Foundation. He hopes to get his Ph.D. next June. Although somewhat late, this bit of news has not been in The Review. Bryce was married on September 9, 1933, to Miss Harriet F. Baker of Brookline, Mass. They are living in Brookline. We extend them our congratulations and our very best wishes for a happy married life.

Wally Tibbetts is still around Tech doing research work. The following bit of news is very, very late, but as far as I have seen, it has not appeared in The Review, so I guess that it is in order to announce that Wally was married on September 2, 1932, to Miss Barbara W. Ford, of Quincy, Mass. They are living in Malden. I'm sure that we wish them the very best of luck and trust that they will forgive our tardiness. — Jerry Truax is still at the Harvard Medical School. He will enter his last year next fall. Jerry hopes to get into surgical work. He has found time to do some research on the side and I'm sure that he is going to turn out to be a physician of whom we can be proud. He comes around to the Institute as often as he can.

I am getting my Ph.D. this June and as yet I don't know exactly just what I'll be doing next year although I have

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several possibilities. I'm still single but hope to follow the good example set by other members of the class before another five years are up. — GILBERT B. AYRES, *Secretary*, Department of Biology and Public Health, M.I.T., Cambridge, Mass.

1932

COURSE I AND XI

Zeke Boling is an engineer doing all-around work with Melchior, Armstrong, Dessau Company in Cambridge. They make a great deal of chemical engineering equipment, including brewery work. Zeke is blissfully married and lives at 70 The Fenway. Open house any evening for the Class of 1932. — Our old pal Bussemius, Otto, you remember, was working for an undertakers' supply house, selling embalming fluid. The mummy industry got dull so that Otto turned to insurance, office work this time.

Don Freeman is a dyed-in-the-wool surveyor, having been with the U. S. Government for quite a while. He's now in Waco, Texas. Brother Follansbee is in the same racket, surveying the woods of Vermont for the U. S. Forestry Service. When last heard from, Leo Tyburski was surveying the roads of Pennsylvania.

Henry B. Mitchell, engaged and soon to be married, is a partner in a wholesale radio and supply business in Maine, covering just about the whole state. Heinrich likes the work and doesn't intend to go back to the forgotten and bankrupt field of civil engineering. Perhaps several others feel the same by now. Bridgman does. The Metropolitan Life for him! Actuarial work he finds interesting and promising. Another bright prospect gone from our chosen profession, how wisely chosen we sometimes wonder.

Some of you may remember that chubby little boy from Indiana, Chuck Thayer. He and his wife are touring New England for Montgomery Ward, staying four days in each town, remodeling stores and warehouses and then hitting the road for the next town, where they pitch their tent again. Join Montgomery Ward and see the world. See vice-presidents, too. Chuck has been chummy with one of those animals. Nothing like a drag, you know.

Your Secretary is still around the Institute, eternally grasping for that elusive doctor's degree. One more year now, that's all. This past year I've been taking all sanitary engineering subjects and like them very much. There's where a knowledge of hydraulics comes in handy. In fact, I hope to get a job in water supply or sewerage work some day. It surely is an interesting field. The Institute has been most kind and generous in awarding me the Austin Research Fellowship for next year, whose stipend is \$1,000. That helps matters along immensely. While on the topic of your Secretary, please look at his address and send some reports of activities, past, present, and future. He and the Grand Secretary are simply starving for news. Here's a chance to get your name in print, so snap out of it!

Course XI is all present and accounted for. Chayabongse has toured the eastern and central states visiting many water supply plants. Then he went to Porto Rico to observe rural water works. Soon he's headed for Siam, there to give people drinking water that sparkles like diamonds and tastes like champagne. Reidell is a foreman for Hood's Milk Company in their Dorchester plant. Bob Thompson has been Professor Camp's assistant this year and plans to continue the same next year, meanwhile finishing up work for his master's degree. — ROLF ELIASSEN, *Secretary*, 225 Orchard Street, Belmont, Mass.

COURSE III

Gentlemen, news! Got a letter a short time ago from Bearce out in Colorado, and he has been hiding the secret from us over a year. He was married in April, 1933 (haven't succeeded in obtaining his wife's name yet), and recently they celebrated the arrival of a daughter. Bearce, old man, congratulations and good wishes from us all to you and Mrs. Bearce. He seems also to be holding a good job out there in the Fairplay Gold Mines in the mill. He says he has had most every job in the mill and is at present on the flotation machines, where he has spent most of his time.

Curtin reports that he has left the Republic Steel Company, where he worked in the inspection department, and is now with Youngstown Sheet and Tube in the metallurgical department. He likes the work much better as it is more in his line: some lab work, but mostly in the mill getting temperatures and data for investigations. Sounds like my job, and I hope he likes it as much.

Through an oversight, some of Haynes' doings were not reported some months ago. He drove a truck for the American Oil Company a number of months this winter. Strikes me he picked out a good winter to be driving a truck. I heard from another source that it got to 17° below at least once up there. (Communication from a spot about 15 miles west of the old Alma Mater.) No wonder he, too, has gone west in search of more gold in the native state. He is out in Colorado with Bearce, on last word, looking for a job, and uncovering some ground on the side for placering. He took some civil service exams for civil engineering last winter, Grades 1 and 2, and feels he passed both well, but had not received an appointment yet when he wrote. Here's hoping.

I understand Johnson is still with the grain and feed people; that Sam Lambert is in Oklahoma (he keeps shuttling back and forth between Boston and the South and it's hard to keep up to him, but he ought to land on something pretty soon for keeps); Tom Hannafin is still looking and ought to find something pretty soon also; Tietig is or was with the Andrews Steel, but can get little information; Werra is with his father in his aluminum foundry up in the beer country; and Kelly looked like a thriving and prosperous business man when I saw him in New York in February. He and I were the only

two at the A.I.M.E. annual meeting from our group, but all the professors were there, and seem to have gotten over their experiences prior to June, 1932. — HENRY J. CHAPIN, *Secretary*, Y.M.C.A., McKeesport, Pa.

COURSE XVI

Here are a few scraps of news for you who have been awaiting news expectantly. For the most part this is through the courtesy of Guzzie Guzwicz.

Guzzie, Joe French, and Johnny Lyon are still with the Budd Company in Philadelphia, enjoying themselves very much, I gather. Incidentally, Joe has entered the realms of fatherhood, being the proud papa of a two months' old son. Congratulations, Joe!

Morrie Etstein is working for his father selling tires. Mike Northam is also with his father in a woolen mill in Methuen, Mass. Reggie Lundstrom was left without a job when the curtain factory in which he worked folded up. According to the latest dope, he is now lumbering in the Maine woods. George Kerisher is working in Sears Roebuck in Brookline.

Ed Eddy is at home on Long Island not doing much since the college where he was teaching fell through. Ed Allee was in a plane crash at Langley Field. Two planes hit in the air; Ed was lucky enough to be able to use his parachute, but the other fellow was not so lucky. — JOHN LAWRENCE, *Secretary*, 17 Washington Street, Rutland, Vt.

1933

I received a letter from Warren J. Henderson, II, back in April giving me lots of data on some of the boys. Here's part of what he says: "I have been working since last fall for the Warner and Swasey Company of this city. My first year is devoted to finding what makes the turret lathe tick, and how they do tick. The company makes ten regular sizes besides numerous special types, so a year is none too much. We are also building an 80-inch telescope for the University of Texas. This is a very interesting venture. — Al Moeller is not located, as yet, but has numerous leads.

"I have a letter from Steve Crik occasionally. I understand that he pumps gasoline, and works for Professor Fales in the Auto Laboratory. Through him, I hear that Neil Hopkins and Bill Harper are at M.I.T. working for advanced degrees. The following is a list of men as Crik lists them: Ellery Clark, York Ice Machinery Company, York, Pa.; Leo Dworzech (legally changed to Dewar in September, 1933), Standard Oil Company; Moe Gordon, Boston Public Library (?); Gallazi, back at M.I.T.; Eggleston, Alaska too tough, plans a job in South America; Red Williams, Unknown, Medfield papers please copy; Taubert, Auto Engineering at M.I.T." Warren's address is 1388 Lynn Park Drive, Cleveland Heights, Ohio.

Here's a few other items from various sources: I. E. Madsen, I, has been appointed special research assistant in

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structures. — C. R. Westaway, I, has gone to work with the Boston Consolidated Gas Company in some kind of a two-year student course. — The engagement of Miss Jean Lindsay to Bill Rand, X, was announced in April. Congratulations and good luck to you, Bill, and you too, Jean, if I may be allowed to become a little personal in this column. — George Garcelon, V, has recently left for Florida to take a more or less temporary position, while he continues scouting around for something a bit unusual. — GEORGE HENNING, JR., *General Secretary*, 163 Barbey Street, Brooklyn, N. Y.

COURSE VIII

I received letters recently from two of the '33 "foreign" students, Dick Morse and Ivan Getting, both of whom are studying abroad. The biggest news from Ivan is the announcement of his engagement to Miss Dorothea Gracy of Pittsburgh, Pa. Miss Gracy is a member of Sigma Sigma Sigma Sorority and a graduate of Indiana State Teachers College, Indiana, Pa. She is now teaching at Beaver Falls, Pa. Best wishes for them both.

In case any of you fellows want to write to Dick Morse, his address is Türkenstrasse 58, München, Germany. Judging from his letters, he has been having a very interesting time of it this year.

Both of the boys are coming home this summer; Ivan after his term ends in June, and Dick some time in August. Ivan, of course, will go back in the fall but Dick wishes it announced to all and sundry that he is looking for a job. — WILBER B. HUSTON, *Secretary*, 79 Washington Street, East Orange, N. J.

COURSE XIV

Chiminello has been with the Boston Consolidated Gas Company since last November 6. He is now working in their testing laboratories at McBride Street in Jamaica Plain. He says that he is connected with their house heating service and also does some work on testing of flue gas and boiler efficiencies where the befuddled customer can be persuaded to use electricity.

John Sbrega is with Westinghouse Company in Springfield, Mass. He is working hard assembling motors and saving money. Says at this rate he will be a millionaire but only after a million days.

I have heard that Murph was connected with the C.C.C. Now for you that are not up with your alphabetical soup, it is the short for Civilian Conservation Corps. He is in charge of the road building and ditch digging in Camp Brimfield. From what he writes it is good fun and also interesting. He has been taking some work in forestry and entomology on the side.

I didn't hear from Bachli but suspect he still has his job with Sprague Specialties building electrolytic condensers in North Adams. I messed up the address to Bob Seyl but see from a bulletin of the American Electrochemical Society that he is a member and is in the employ of Ma-

jestic Radio in the capacity of special tester.

I am still with the Althouse Chemical Company in Reading and am learning plenty of organic and a little German. I knew German once but, like all the rest of Professor Kurrelmeyer's *protégés* that I remember, it is forgotten. How I wish it were otherwise.

Of Course XIV men graduating in 1933, this makes them 100% employed and The Review can change a little of their data around. Don Brookfield, who did not graduate with us, came across with a good long letter in answer to the inquiry sent him. He lacks only the writing of his thesis to graduate, he tells me. In a paragraph cloaked in indefiniteness, he says that he is promoting a new type of instrument of his own design. He claims that it is approved by the secretary of the A.S.T.M. There is the catch. Those letters stand for nothing in the New Deal that I know about. We'll have to ask him to be more definite next time. — OTTO A. PUTNAM, *Secretary*, 540 Pear Street, Reading, Pa.

COURSE XVII

The returns to my post card plea for news were very gratifying, although it was not the 100% at which I was shooting. Sully and Bob did not crash through, so you will have to refer back to the Departmental Gossip for the latest dope to be offered from those sectors, although Tom might throw some light on Bob as he sees him twice a month at Reserve Officers' meetings. And speaking of the gossip, I enjoyed that immensely. To clear up a point, the Professor quoted me wrongly about New York being a "mess" because I had to commute every day. What I meant to convey was that New York was a "mess" due to its conglomerate development.

Coop stepped up this time with a report that he has been running a level on a U. S. Coast and Geodetic Survey and also on the Geological Survey. He says it was CWA work and came in pretty handy during the winter. Sounds darn interesting to me, but I think that last part about being handy for the winter goes without saying. Beau was complaining that Coop had forgotten us all, but now that the ice is broken, let's have some more news from the Mid-West.

Tom writes in that he still thinks the past winter has toughened him to a point comparable with that steel Peskin used to talk about, but now that the thaw has set in, he is wasting all of his pent up energy pulling himself out of knee deep mud holes. He says the frost went into the ground 34 inches. I will back him up on that as we had over two feet on the Island and no 24° below zero to brag about. My recommendation for Tom's use of his spare time is a Ford salesman, as he used his Henry every day all winter at the above recorded temperatures, with 79,000 miles ticked off to boot — almost a record, what do you think?

The Colonel is keeping right along with his military title, although I cannot decide whether he is in the Military In-

telligence Service, or the Cavalry. He speaks of having received my card, and having had some trouble "decoding" it, which would tend to put him in the former. His next paragraph tells of changing horses in mid-stream, so that might indicate the latter branch of service. In either case, it is hard to decide. The Colonel has changed over from the painting business, however, and is now selling residing and reroofing jobs to home owners on a commission basis in connection with the Dix Lumber Company. Here is best wishes for a successful season. He also says he is pretty busy doing most of his work nights. That statement is not qualified so I leave that to the imagination.

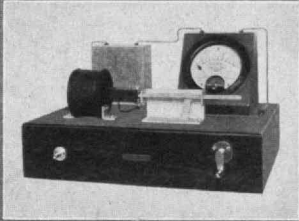
Speaking of a commission basis, Ed Rowell reports that he is at work now. A carpenter and builder has taken him on the staff on that basis. Ed scouts the new work coming out, the builder figures the job, and if they are lucky enough to get the work (or most unlucky as it so often comes out), he pockets his fee, and calls it a job well done. So far the business has been the direct opposite of fact, but I refer Ed to the Colonel for pointers on how to get your man as the latter has netted several jobs already. As you say though, Ed, the worm is sure to turn.

It seems Beau is all hot and bothered this month as the PWA and NRA reports required on his government contracts at Fort Monroe have gotten under his collar. His reactions are about on a par with a horse that had a burr under its saddle. The thrashing about was terrific, and after reading the letter, I felt as though I had been on the receiving end of a couple of kicks myself.

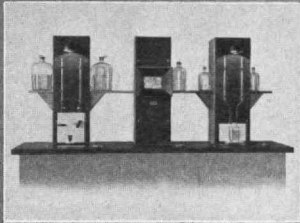
Jim just managed to get in under the wire this month. His letter came while I was writing up these notes, and he reports that he is still in real estate from head to foot, the management of which is a real profession from many angles. Right now he is chasing people to pay their rents. It would be good to hear Jim, with his experience behind him, and MacSweeney bat it out now on the subject of property, real and otherwise. It is too bad that we cannot arrange another seminar for some good hot debate would be in the offing.

As for myself, I am still in New York, and now spending most of my time at Governor's Island. We have had three contracts under way for over two months, but due to the cold and rain we are still working on the foundations, the progress being P-U-N-K up to the present time. Beau was in town St. Patrick's Day week-end visiting his O.A.O. (One and Only). We had luncheon together at a very nice place on Park Avenue (not as expensive as it sounds) and had a fine visit, but all too short as he had to rush off to a *matinée*. I made a hurried trip to Boston the week-end of April 14. I did not get there until Saturday night, and as I had to be back in New York on Monday my time for visiting was just about nil. Next time though I plan a longer stay, with time to visit all of the XVII men in the vicinity. — DONALD R. NEIL, *Acting Secretary*, 45 William Street, East Orange, N. J.

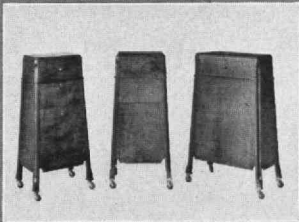
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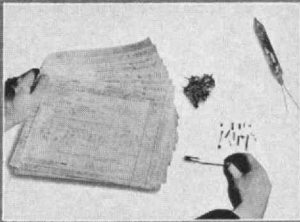
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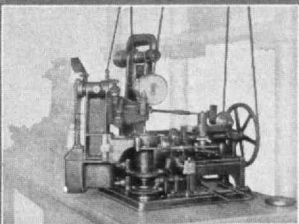
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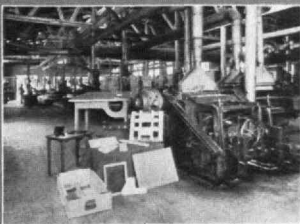
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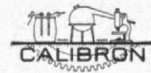


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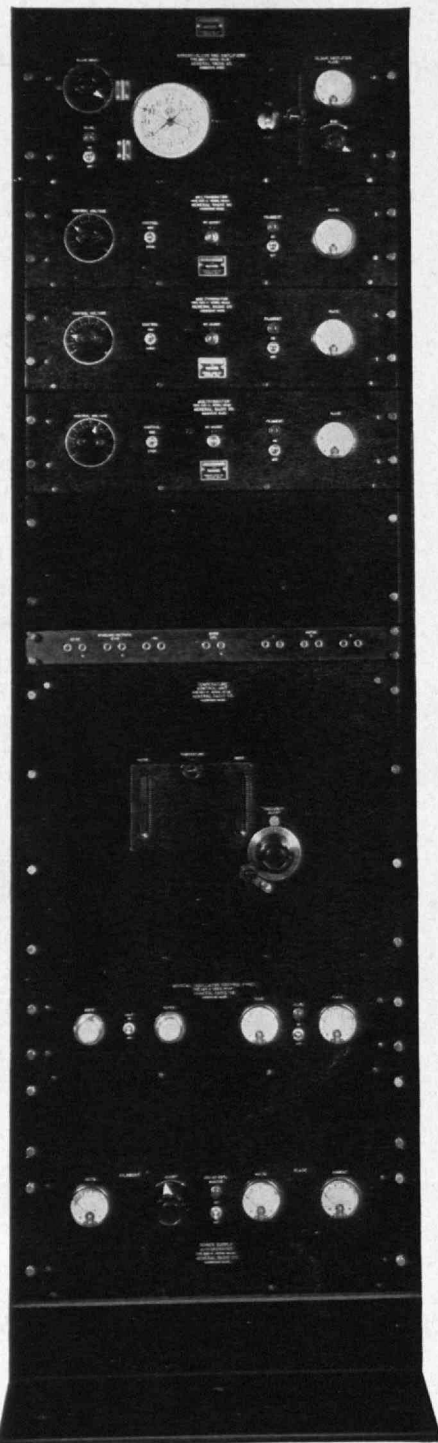
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BULLETIN 10

Bulletin 10 presents a discussion of modern methods of frequency measurement and describes the General Radio Frequency-Measuring Equipment. We shall be pleased to send you a copy.

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